ASA BULLETIN

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ASA MEMBER-BODIES

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Am. Home Economics Assn.
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Arthur Kallet — F. J. Schlink

ASA Officers for the Year 1931 Elected at Annual Meeting

Accomplishments of past year reviewed by retiring president before Standards Council and Board of Directors

Bancroft Gherardi, vice-president and chief engineer of the American Telephone and Telegraph Company, was elected to the presidency of the American Standards Association at the annual meeting of the Association at the Astor Hotel, New York, on December 11. Mr. Gherardi has been affiliated with the American Telephone and Telegraph Company since 1907, and has been vice-president and chief engineer since 1920. He is past president of the American Institute of Electrical Engineers, and has also served as president of the United Engineering Society. Mr. Gherardi has been an active member of the ASA Board of Directors since the organization of the Board in the latter part of 1928, and has been chairman of the ASA Finance Committee.

Cloyd M. Chapman, engineering specialist of New York City, was re-elected to the vice-presidency of the Association for the year 1931. Mr. Chapman entered the employ of Thomas A. Edison in 1899 as assistant in his private laboratory on experimental work. He has been engineer for Westinghouse, Church, Kerr and Company in charge of design and construction work and as engineer of tests. His work has included the design and construction of a number of important central stations and industrial plants. He has been a member of the ASA Committee on Cooperation with the United States Committee of the Electrotechnical Commission, and of the ASA Committee on Procedure. He is chairman of Sectional Committee B17 Standardization of Shafting.

In addition to being elected vice-president of the Association, Mr. Chapman becomes chairman of the ASA Standards Council. The vice-chairman will be John C. Parker, who is vice-president of engineering of the Brooklyn Edison Company.

Announcement was also made at the meeting of the re-election to the ASA Board of Directors of the following:

Quincy Bent, vice-president, Bethlehem Steel Company
L. A. Downs, president, Illinois Central Railroad
F. E. Moskovics, president, Improved Products Corporation

Mr. Gherardi succeeds in the presidency of the Association William J. Serrill who has held this office since April, 1928. The accomplishments of Mr. Serrill during his presidency were highly praised during the course of the meeting by F. E. Moscovics, a member of the ASA Board of Directors. The work of the Association during the past year was reviewed by Mr. Serrill in his report to the meeting. The report follows:

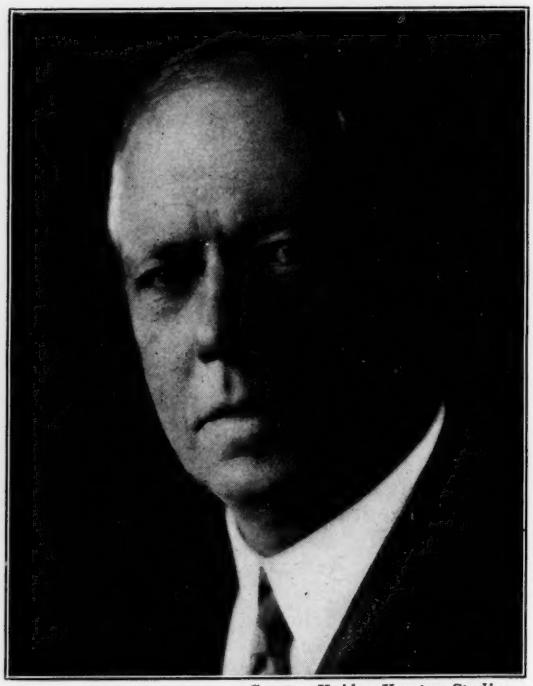
Report of the President

A review of the work of the ASA for 1930 illustrates the fact that tools and talent are essential to good works. In our case, the tool which we lacked in the past was the money to spread the Association's usefulness. There had always been an array of talent on the Standards Council, the technical committees, and the staff, but the staff had been too small to do many of the things which would make American Standards better known and more widely followed. In 1930 the work of the ASA gained impetus from the smoother functioning under the reorganization of two years ago, and from the larger staff which the increased resources made possible. During the year a total of 46 national standards were approved by the Association. This is at the rate of nearly one a week; and while judgment in such matters must not be based on quantity alone, none the less as a record of work accomplished and—more important—valuable service to American industry, it is a fact of which both the Association and those who have contributed in any way to this work may well be proud.

Of the 46 standards approved, 19 were entirely new and 27 were revisions of previous standards. Several of the new projects had been studied for nearly ten years, although the majority of them were initiated more recently. Of the total, 8 were in the mechanical group, 7 in civil engineering, 5 chemical, 3 electrical, 2 mining, 2 woodworking, and 19 in the miscellaneous classification.

Some of these are worthy of particular note. The Safety Code for the Use, Care, and Protection of Abrasive Wheels is of concern to a

great variety of manufacturing industries and since the publication of the standard there has been a steady, heavy demand for copies. The Code for Lighting Mills, Factories, and Other Work Places is also one of wide application. It represents the result of long, scientific study and the recommendations are such as to be of practical value to architects and factory managers in planning their lighting for both economy and efficiency. The Recommended Practice for the Use of Explosives in Bituminous Coal Mines and the Recommended Practice for Fire Fighting Equipment in Metal Mines have been commented on very favorably by certain State Mine Department heads who say that these standards fill a long needed requirement of the mining industry. A group of dimensional standards, including those for Ball and Roller Bearings, Dimensions of Cut and Ground Taps, and Track Bolts and Nuts are of particular importance in the mechanical engineering field. The Safety Code for Mechanical Refrigeration, approved in November, is considered so important that several manufacturing groups are planning comprehensive promotion activities that will bring it to the attention of municipal authorities, Chambers of Commerce, Real Estate Boards, State regulatory bodies, and the technical and daily press.



Courtesy Kaiden-Keystone Studios

Bancroft Gherardi

It is indicative of increased interest to note that the sale of published standards during 1930 was more than double that of the previous year. Also an ever-increasing number of people are making use of the ASA Information Service as an aid in studying their own particular standardization problems. Since June, 1930, the ASA BULLETIN which is available primarily to Sustaining-Members and Member-Bodies has been sent monthly in printed form—another improvement made possible by additions to the staff. In a printed magazine it is possible to include a larger amount of material in more convenient and usable form. Each month 250 or more marked copies of the BULLETIN have been sent to magazines, trade associations, companies, and individuals as a means of securing publicity and promoting the work of the Association.

Many of the activities I have mentioned would have been impossible of accomplishment but for the three-year underwriting fund which brought the resources of the ASA up to about $150,000 a year. A total of sixteen organizations have made special contributions which for 1930 totaled $95,000.00. Early in 1931 an intensive effort will be made to increase the sustaining-membership so that the revenue from this source may be sufficient to carry on the Association's work in a way that will be of greatest practical value.

To say that standardization as a vital factor in such a highly industrialized country as ours is being more and more widely recognized at its real value by industry generally, and that its lessons are no longer confined to the realm of theory but can be measured in very definite terms of dollars and cents, is a logical conclusion that may be drawn from a survey of the Association's work last year. One might look upon standardization as the third basic element in a powerful industrial triumvirate—the other two being advertising and research. There is good supporting opinion to substantiate the statement that more lasting value is to be found in sound standardization development than is to be reasonably expected from high-pressure salesmanship which has a tendency to increase the ultimate cost of goods to the final user because of the excessive cost of high-powered sales methods. If the ASA has contributed to a better understanding of the great practical economies that can result from intelligent standardization in manufacturing processes, then the application of this knowledge to the present situation should help in allaying some of the industrial ills from which the whole country has been suffering in recent months.

In spite of general business conditions, the ASA has continued to grow and expand its

sphere of usefulness. Since the reorganization of 1928, ten new Member-Bodies have become affiliated with our work. Five of these national groups came in during 1930. The American Railway Association is now participating more actively in our work in a way that is exceedingly valuable both to them and to ourselves. The sustaining-membership list has also been increased and revenue from this source is in excess of that of the previous year.

The facilities of an enlarged staff have permitted the Association to establish close, cooperative relationship with a large number of State regulatory bodies and with many State industrial organizations. The enlistment of their interest is valuable in furthering the work of the ASA by making American standards more widely known. A resolution passed at the meeting of the Association of Governmental Labor Officials in Industry, held in May, 1930, illustrates the far-reaching effects of such cooperation. The report, which was unanimously approved by the Convention, said in part:

"It is very evident that no State Legislature will be induced to enact safety laws of the right kind unless there is presented to it some definite, logical, and workable plan to be adopted and followed, which would make the laws effective. Therefore, the officials of each state are urged to study the procedure in all of the states, and out of the fund of practical experience, formulate a plan that will make effective its own safety program.

"In the formulation of safety regulations and the adoption of specific safety devices, your committee suggests and urges the consideration of the various safety codes adopted by the American Standards Association, known as the 'National Safety Codes.' These constitute the best thought and judgment of the foremost safety engineers and experts in accident prevention work in the United States. Sixteen of these codes have been published as bulletins by the Bureau of Labor Statistics and are available upon request."

Courtesy Lucas-Kanarian

Cloyd M. Chapman

The Association still maintains a member on the Planning Committee of the Division of Simplified Practice. Mr. A. A. Stevenson has been our representative on this committee and was recently elected as chairman of it.

A member of the ASA staff attended a series of meetings on technical subjects which were a part of the Paris conference of the International Standards Association held in Paris in May, 1930. Among the decisions of greatest interest to American industry was the election of the ASA to appoint a member on the ISA Council, beginning January 1, 1931, and the assignment to the American group of the international secretariat for the project on Nomenclature and Methods of Test of Petroleum Products.

While the sum total of progress for the year has been commendable, there is still plenty of work that lies ahead. Certain of this may well be mentioned here because it includes extensions of activities which have already been begun.

First comes the permanent financing through a much larger number of companies contributing to the support of the work. As more industries become familiar with standardization developments it is inevitable that they will cooperate financially as well as otherwise. During the next year increased promotion is planned to make the ASA and its functions more widely known. This will be directed with a view not only to increase the sustaining-membership but also to expand the sale of published standards. The Association needs more Member-Bodies—and more of these prospective groups need the ASA for the development of standards that concern their own membership.

As an aid to these objectives more contacts must be made in the middle and far west. Until recently the staff has been too limited to develop this fertile territory. Then, too, staff members must make many more visits to industries, not only as a help in their own work but also to increase the service of the ASA to its membership. The enlarged person-

nel has made it possible for the staff to keep in closer contact with the work of various sectional committees, many of whose meetings have been attended by staff members. This activity should be extended as far as possible.

In spite of the large number of standards approved in 1930, there still remains a considerable number of projects that should either be pushed on to completion, or else work on them should be reorganized so that they can be roused from their static state into live, advancing projects.

During the year several members of the staff have prepared articles for publication and given addresses before various groups. This activity should be and will be extended during 1931. The technical press is anxious for articles concerning our work and it is expected that a certain amount of time of each major staff member will be given to the preparation of such material.

There is every indication that a much larger field of usefulness lies ahead for the ASA, especially with increased membership and the addition of new Member-Bodies, because progress in both of these directions will uncover more problems requiring standardization where a final agreement on standards arrived at under ASA procedure will be of practical economic benefit to producer and consumer alike.

WILLIAM J. SERRILL

Fewer Special Tools Required

A reduction in the number of special tools necessary in manufacturing operations was pointed out as an important advantage of standardization in an article which appeared in the *Electrical Review* in August, 1929:

"Standardization does not mean that all manufacturers of a similar product are going to produce exactly the same article with monotonous regularity, or that there will be no variations in design or appearance, but rather that old and cumbersome methods of manufacture and the old rule-of-thumb calculations will be superseded by simple and efficient operations and mathematical calculations.

"Designs, whilst giving full play to the individual mind, will be on lines of similarity for various products, thereby enabling the same machinery to be used for many more operations than heretofore, and with greater efficiency on behalf of the operator. The same tools can be used over a much larger range and the number required can be considerably reduced, with a consequent reduction of that irritating item 'special tools.'"—From *The Electrical Review*, August 2, 1929.

Standardization Needed in Printing Industry

There is a vital need for more standardization in the printing industry, according to a paper presented by Fred S. English, Chief Engineer of the Babcock Printing Press Manufacturing Company, at the annual meeting of the American Society of Mechanical Engineers, held in New York City, December 1–5, 1930.

Although the United States Bureau of Standards has recommended standard sizes for paper, catalogues, commercial forms, and checks, these standards are not very generally followed, Mr. English says, and he lists "standard sheets and forms" as one of the items which should be further standardized.

Other items mentioned by Mr. English, which if standardized would simplify the work of the printer, include:

Height of bed bearers
Height of bases and plates
Curved plates
Diameters of cylinders
Depth of impression
Height of cutting and creasing rules
Names of parts

MSS Standard for Bronze Screwed Fittings Available

The Manufacturers Standardization Society of the Valve and Fittings Industry (MSS) has recently issued the 1930 edition of its standard SP-10, covering bronze screwed fittings for 125 lb steam pressure which can be purchased at $1.50 per copy.

The MSS has also issued a new standard SP-11 covering bronze screwed fittings for 250 lb steam pressure, which sells for 50 cents per copy.

BESA Standards for Cranes

The British Engineering Standards Association has just issued three specifications relating to cranes. These are:

327 Part 1-1930, "Derrick cranes (power driven)"
327 Part 2-1930, "Derrick cranes (hand operated)"
357-1930, "Traveling jib cranes (contractor's type)"

Copies of these specifications may be borrowed or purchased for sixty cents each from the ASA Information Service.

Queensboro Chamber of Commerce Discusses National Standards

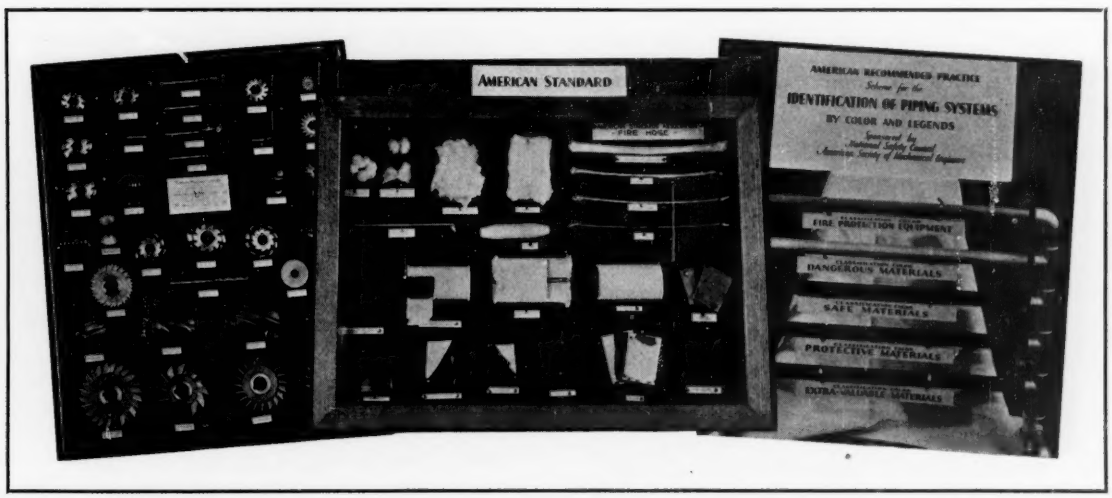
Exhibit of products manufactured in accordance with ASA standards is a feature of meeting on use of standards in industry

The work of the American Standards Association and the value of national standards to individual industrial establishments were discussed by the Queensboro Industrial Council of the Chamber of Commerce of the Borough of Queens, New York City, at its monthly meeting held on November 20, 1930. The meeting was arranged as part of the program of the ASA committee on Promotion of the Use of Safety Codes in Industry, of which J. A. Morford of the National Industrial Conference Board is chairman.

The speaker was H. Walter Forster, a member of the firm of Brown Crashy Company, Philadelphia, Pa. Mr. Forster is best known through his long connection as vice-president of the Independence Bureau of Philadelphia, which is professionally engaged in the interrelated subjects of fire prevention, accident prevention, and industrial relations. It was while carrying on this work that Mr. Forster first came in contact with the ASA and was one of the group that met in Washington, D. C., to urge the development of national safety codes under ASA procedure. He has been a member of several sectional committees.

Mr. Forster presented a picture of the early standardization of fundamental units by royal decree and the present necessity for national standardization. He showed the important part which standardization has played in the development of individual industries and its general effect on the development of the industrial, economic, and social structure of the country.

Cyril Ainsworth, the safety engineer of the American Standards Association, reviewed National Safety Code activities and called attention to the work of the New York State Department of Labor and Industry in this respect. It was pointed out that this State Department develops safety regulations through public hearings to which every interested individual is welcome and in which his suggestions are given ample consideration. These regulations, when approved, are made effective by the State through a periodic inspection service. Mr. Ainsworth suggested that all individuals responsible for the safety of others not only cooperate with state inspectors but that they also take an active part in the development of state and American Standard safety regulations.



A Few of the Exhibits Which Were Displayed at the Meeting of the Queensboro Chamber of Commerce.

Several panels illustrating graphically the activities of the American Standards Association were arranged at one end of the dining room. These were accompanied by a number of company exhibits of products conforming to American Standard dimensions or specifications. Some of these displays, and the organizations which contributed them, were:

Ball and roller bearings—SKF Industries

Cotton rubber lined fire hose—U. S. Rubber Company

Dry cells—National Carbon Company

Fire hose couplings—the American Society of Mechanical Engineers

Identification of piping systems—National Lead Company

Lead and storage batteries—Electric Storage Battery Company

Milling cutters—Brown and Sharpe Manufacturing Company

Pipe flanges—Crane Company

Plow bolts—John Deere Plow Works

Safety features of laundry equipment—American Laundry Machinery Company

Safety features of rubber machinery—Wm. R. Thropp & Sons

Safety glasses—American Optical Company

Screw thread comparator—Jones and Lamson Machine Company

Small rivets—Champion Rivet Company, Townsend Company

Wood and cap screws—Reed & Prince Manufacturing Company

National Industrial Conference Board Book on Standardization

Sustaining-Members are reminded that the volume on industrial standardization by R. A. Brady, published by the National Industrial Conference Board, may still be obtained through the American Standards Association Information Service at a discount of ten per cent from the regular price of $3.50. This volume provides the most comprehensive and thoroughgoing study which has yet been made of the whole subject of standards and specifications from the standpoint of manufacturer, distributor, and consumer and should be read by everyone interested in his subject.

Standardization Simplifies Household Management

The importance of standards as a means of simplifying household management was pointed out by Miss Lita Bane, editor, Modern Homemaker Department, *Ladies' Home Journal*, in an article in a recent issue of that publication.

"While standardization has some very real limitations," Miss Bane states, "still it can be depended upon to accomplish certain things that will simplify household management. In the realm of taste, standardization will probably never operate with any degree of success. Let us hope, at least, that this will be the case.

"Our esthetic sense is in no way offended, however, when we have standardized sizes for plugs for the bath tub, for blankets for our beds, and for bolts and screws. This list could be extended almost indefinitely.

Minimum Standards Desirable

"Standardization of quality is more difficult since a wide variety of purposes must be served. For some purposes a mixture of cotton and wool is more satisfactory than all wool or all cotton. When tomatoes are to be cooked, there is no reason for having only whole tomatoes in the can. These and a thousand other suggestions will occur to you. Certain qualities can be pretty closely defined, however, and a minimum set up which should help to make the buyers' problems less complicated.

"Standards of performance also are difficult to specify. Just what are the tests of efficiency for a gas stove, for example? Nevertheless, there are possibilities in this field, and we shall, perhaps, build up some sort of vocabulary by which the buyer and the seller can discuss intelligently the performance of machinery to be used.

"Probably we have not emphasized standardization of procedures as we might profitably do. If there is one especially efficient way to make a bed, why not teach everyone how to make it in this particular way? And unless the worker enjoys loitering through the job, making it recreation, why not standardize and get it out of the way as quickly as possible?

"While standardization is by no means a cure-all, if it is applied with discrimination I believe it can be counted upon to simplify the household buyer's problems."

National Standardization an Important Factor in Russia's Industrial Planning

The work of the U.S.S.R. Standards Committee, as discussed by the writer with two or three standardization experts in continental countries, is known to be excellent. A general article on this subject from the official publication of the Committee was printed in the October issue of the ASA BULLETIN. It is unfortunate that time did not permit a trip to Moscow to study the work of this committee. However, the following information, believed to be reliable, has reached the writer from sources outside the Russian committee. It is to be noted, however, that on the actual completed standardization work of the Russian committee the ASA is fully informed through the agreed interchange of approved standards among all of the national standardizing bodies, and on any subject of particular interest the ASA can frequently obtain draft material that may not yet have reached the stage of approval. The Russians, in order to facilitate their understanding of work done abroad, have just made arrangements to receive all the usual exchange material, drafts, preliminary issues, and finally approved standards, in five copies instead of three.

The staff of the Russian committee is many times larger than that of any other national standardizing body, there being now approximately 450 persons regularly employed in standardization work under the central organization, more than seven times as many staff members as there are in the German Standards Association, the largest outside of Russia. It is the belief of those with whom the subject was discussed, that the U.S.S.R. standards are not "paper standards" but are actually at work and are very well received.

Standards for Common Articles

The great rapidity with which the standards are being turned out results largely from the fact that they deal with simple, commonplace articles with respect to which the need for and economic value of standardization are so evident as not to justify extensive argument, pro and con. Results are, therefore, quickly and easily achieved. Something of this sort, together with a predominance of the general viewpoint favoring the consumers' interests, has been the case also with the larger part of the work of the Federal Specifications Board in America, which has similarly had a large outturn of finished work in a phenomenally short time.

In many cases, the subjects undertaken in the Russian work are ones on which little scientific work has been done, and on that account controversial questions have not yet developed, so that a first step toward codification of practice or method of manufacture can easily be taken in such cases. Even though the work is far from final in form and content, it is regarded as a distinct advance over previous practice, often completely uncodified, a situation which is exactly like that found in many of the subjects dealt with by the Federal Specifications Board whose specifications are occasionally rudimentary and tentative in quality, and by a great many important trade associations functioning as consumers, for example: the American Railway Association, the American Bakers' Association, the two large mail order houses, and the National Retail Dry Goods Association (with respect to store operating supplies such as paper, twine, cardboard, boxes, etc.).

Funds Available for Work

It is known that in some cases at least, the U.S.S.R. standards committee was given a grant, practically of whatever sum it considered needful to carry out a given standardization project, amounting in a particular case recounted to several per cent of the total annual production of the industry. It was found that this yielded an unnecessarily large amount and the scale of assessment of the industry was therefore reduced.

It is the general belief of those in European countries in touch with or aware of the general kind and amount of the Russian standardization activities, and a number of European bodies are known to be quite well informed about the progress of the Russian standardization movement, that its activity may, through its large scope and direct application to young industries growing up from rudimentary beginnings, have as large an effect on the growth and quickening of the industrial life of the country as almost any other single factor. It is perhaps true that in Russia the standardization movement is having its most important application, considered from the standpoint of its centrally planned and directed quality, the close dependence of the newly developed Russian factory system upon it, and its special emphasis upon specifications and standards for consumption goods.

F. J. SCHLINK

Standardization Helps Effect Savings in Czechoslovakia

One of the nations which has been most active in rationalization in general, as well as standardization, is Czechoslovakia. Some of the accomplishments of the Czechoslovakian standardizing body are cited in the following item from the *Central European Observer* of Prague:

"Rationalization of industry is a scientific problem whether it concerns production, management, or marketing. In Czechoslovakia, rationalization is concentrated in the hands of the Normalization Society founded in 1922. Up to now the Society has issued 43 rules and on its various committees are employed over 1600 experts of all kinds. Let us here mention just a few examples of what the Society has already accomplished. In the past there were in practical usage over 290 different automobile tires. Now, thanks to the work of the Society, their number has dropped to 34 and the costs of production were reduced to some 50 per cent of the original amount. Rationalization means besides other things a decrease in the number of manual workers as compared with the number of mechanics. In the Czechoslovak mines the number of mechanical workers as contrasted with the manual labor has increased from 25 per cent before the War to 75 per cent at the present time.

"Millions of crowns were saved by the introduction in business of standardized sizes of paper. In the near future the same will be done in all the government offices, which will result in further lowering the costs of administration. Another side of the normalization efforts are savings in fuel. Since 1921 the demand for coal at the Vítkovice Iron Works decreased to 60 per cent of the pre-war need. The Skoda Works consume now 520 tons of coal less than before the rationalization. Through rationalization, the efficiency in packing in an agricultural-machines-factory was raised full 100 per cent. By applying to the practical production modern scientific methods the repair workshops of the Skoda Works were able to raise their output equally by 100 per cent. Professor Hasa declared during his speech at the Prague conference of the Czechoslovak and Slavonic Engineers that in several factories and trade firms rationalization meant not only a decrease of the costs of production but also an increase in wages. This increase ranged from 12 to 30 per cent. The time necessary for the production of one pair of shoes was reduced from ten to four days. Of the plans which occupy at present the various committees of the Society the most important is that which concerns the study and rationalization in the state and town administration and then that which aims at an exchange of practical experiences between different firms and industrial undertakings."

New British Standards Are Available

A revised edition of the British Standard Specifications for Tungsten Filament Electric Lamps has been received by the American Standards Association. The specifications include standards and definitions, and schedules for various types of lamps covering dimensions, initial rating, life performance, and percentage allowances on life performance.

Appendices are also given covering an example of computation of results of life performance and dimensions of the various types of lamp caps.

The foreword to the new British Standard Classification of Symmetrical Light Distributions from Lighting Fittings states:

"The need has long been felt for a common terminology by which the characteristics of lighting fittings can be briefly described and compared. The characteristics of a lighting fitting in this connection refer to its light distribution, although other particulars may have to be given if it is desired to describe all the characteristics of a fitting. . . .

"The method adopted for this specification classifies the light distribution, first by reference to the class of lighting for which a fitting is intended and second by the character of the light distribution curve. The method in its present form is applicable only to lighting fittings which have a symmetrical light distribution."

A new British standard specification covering "High Carbon" Steel Cylinders for the Storage and Transport of "Permanent" Gases is now available. This document is a specification for steel bottles for containing compressed gases under a pressure of not more than 120 atmospheres (taken as equivalent to 1800 lb per sq in.)

Copies of all of these documents are available for loan through the ASA Information Service.

Scientific Testing of Materials Makes Today's Achievements Possible

The following is extracted from a radio address "The Romance of Engineering Materials," delivered on November 1, 1930, by H. F. Moore, Research Professor of Engineering Materials, University of Illinois, past president of the American Society for Testing Materials. Professor Moore has done pioneering work in the conduct and direction of research into the properties of materials, and is particularly well known for the extensive researches in the fatigue of metals which have been conducted under his direction at the University of Illinois.

The prophets of olden time in performing their official duties mumbled incantations, brewed magic messes, and made wise cracks about the arrangement and the significance of the intestines of freshly slain fowls. The prophets of today make predictions with the aid of the test tube, the microscope, the slide rule, and the testing machine. . . .

As in the ancient world there were schools and fraternities of prophets, so in the modern world the prophets gather together into associations and societies, and the American prophets of the strength and durability of materials are gathered —some 4500 strong—into the American Society for Testing Materials. . . .

One important element in our modern civilized life is the fact that today we have available many materials whose strength can be predicted and controlled. The builders of the ancient world had to take materials as they found them in nature. . . .

Not only are we all vitally concerned with our physical safety, we are also greatly concerned with the cost of living—the cost of clothing, of household goods, of farm implements, with the amount of the taxes we must pay to keep up sewer systems, pavements, water works. Now a very large factor in determining these costs is the wisdom used in selecting suitable materials, materials whose money cost, strength, and durability are well balanced. . . .

The development of the science of testing materials is a comparatively recent thing. Perhaps the first systematic testing of materials was done some two and a half centuries ago in connection with insuring a standard quality of coinage. That gigantic figure in the scientific world, Sir Isaac Newton, did not think it beneath his dignity to spend many of the best years of his life developing standards for metals and processes in the British mint. However, the idea of systematically testing the common materials of every-day use is quite recent. The troubles of the early railroads with axles and rails was a great factor in encouraging such testing. The Prussian state railways back about 1850, and our own railways in "the gay 90's" began to demand materials whose strength and ductility were not merely glibly promised by the maker—or by his salesman—but were shown to exist by actual tests.

Speaking of buying materials on the reputation of the maker without further testing, I remember in my boyhood days the quality of steel in our jack-knife blades was judged by the reputation of the maker's name. Back in New Hampshire the boy whose knife blade bore the name Jonathan Crooks was sure he had a superior article. Actually it was not at all difficult to stamp the name Jonathan Crooks on an inferior blade, and many blades so stamped were sold.

Fifty years ago there were very few standard tests or specifications for any of the ordinary materials in use; today there are some 10,000 well-recognized standards for materials. We may decry over-standardization, but certainly we should have to do without very many of the modern conveniences if standardized, predictable materials ceased to be produced.

Now it is obvious that before any test, whether of strength or wear or color, can be accepted as a standard test for a material it must be shown that the test really shows the presence or the absence of the desired service qualities in the material. Some spectacular tests really tell very little about these qualities. There used to be a superstition that if an elephant would set foot on a bridge the bridge was safe. The huge animal was credited with a mysterious and infallible sense of safety. As a matter of fact the slow steady tread of an elephant would not be nearly so likely to cause the bridge to fail as would the banging of a heavy motor truck, and no one ascribes any infallible sense of safety to either the truck or its driver.

But tests which are made with scientific apparatus and which seem scientific may be as lacking in reliability as the elephant test. For example, the resistance of a metal to corrosion is sometimes prophesied from the results of a test in which it is dipped in strong acid for a few moments. The amount of metal dissolved in the acid is taken as a measure of its corrodi-

bility. As a matter of fact, a low loss of weight in this test is no proof whatever that the metal will resist ordinary rusting in air and smoke and rain for long periods of time.

Sometimes material is tested by being subjected to two or three times the load it will have to stand in service and if it withstands this test load without fracture it is judged fit for use. This sort of overload testing is rather dangerous. It cannot be safely assumed that because a heavy overload is safely carried once an ordinary load can be carried thousands or millions of times. That one heavy overload may have started tiny cracks in the material and under thousands of repetitions those cracks may spread —like the crack in a glass show case—until a shaft or a beam suddenly snaps in two without warning. Most of the failures of materials in airplanes and high speed machinery are of this class. "Fatigue of Metals" is the name given to the destructive action of these spreading cracks.

Railway inspectors remove axles from locomotives and from elevated and subway cars after a certain distance has been run and examine them minutely for evidences of the beginnings of such cracks, and if the smallest crack is detected the axle goes to the scrap heap.

Before putting much confidence in the statement that a material has been "tested" it is well to find out whether it has been tested by *standard methods*, methods recognized by some of the scientific bureaus of the government or by some technical society. It has come to be recognized that in devising tests and standards for materials it is vitally important that the interests of both manufacture and consumer be considered. If the consumer alone is allowed to write specifications for a material he is likely to set up a number of fussy requirements which do not add much to the reliability of the material, but which do add greatly to the cost. On the other hand, if the manufacturer alone is allowed to write specifications he will almost certainly see to it that the materials shall be easy and profitable to produce. These statements are no reflection on the morals of either consumer or producer; they simply recognize the fact that every man naturally over-emphasizes his own viewpoint.

In the American Society for Testing Materials the standards for materials and methods of test are prepared by some 50 committees—committees for steel and iron, for other metals, for concrete, brick, textiles, timber, rubber, etc. The rules of the society require that on each committee there must be representatives both of the manufacturer and the consumer. Rarely does the society accept the recommendations for a new standard unless there has been practical unanimity between manufacturers and consumers. That is, a proposed test or specification is not recognized until a representative group of manufacturers and consumers has talked it over and decided that it is reasonable, safe, and useful. . . .

British Tire Industry Needs Standardization

The need for standardization in the tire industry is discussed in the April 11 issue of the *Financial News* of London:

> "In the tire industry over 150 different types are required to meet the needs of cars in the United Kingdom alone. Tire manufacturers in Canada and the United States had worked fairly closely together with the British manufacturers in the matter of standardization, but the French did not join in at all.
>
> "Many of the firms engaged in the general rubber goods industry were old-fashioned and conservative in their methods. That applied particularly to the firms in the United Kingdom and on the Continent of Europe.
>
> "This lack of standardization results in uneconomical methods of working, and checks the adoption of commercial practices which might be of great benefit to the industry, such as cooperative advertising and the use of a general trade-mark.
>
> "As instances of this, it is pointed out that practically every marine engineer in the United Kingdom insists on a different color being given to the rubber used in packing the joints of engines. About 50 different sizes of belts are in use in the United Kingdom for driving motor cars (motor car fans), all within a millimetre of one another in size, and, similarly, little difference in shape. An analysis of the catalogues of four firms in the United States revealed that the number of varieties of rubber boots and shoes exceeded 77,000.
>
> "There is, however, at the present time in the United Kingdom a distinct movement in the industry toward standardization. There are also signs of the development of a system of rationalization in the rubber industry of the United Kingdom.
>
> "Such a movement will definitely give the United Kingdom industry a progressive policy which should improve its position as one of the staple industries of the country. If in all these measures substantial agreement in the trade throughout the Empire can be obtained, the competitive position of the rubber industry of the Empire should be strengthened."

Centralized Purchasing by Municipalities Encourages Specification Buying

The greater ease of standardizing types and sizes of tools, stationery, and equipment used by the various departments of a municipality is one of the advantages of centralized purchasing cited by Joseph W. Nicholson, city purchasing agent for Milwaukee, in an address delivered before the annual meeting of the League of Wisconsin Municipalities on June 12. In his address, printed in the August issue of the *Purchasing Agent*, Mr. Nicholson says:

> "By reducing types and sizes used to a few, fewer individual purchases are made and the quantities are larger. Fewer purchase orders, requisitions, and checks will be required, and if the commodity bears a sliding scale of prices depending on the quantity of purchases there will also be the advantage of lower prices."

Mr. Nicholson gives an example of one of the chief difficulties involved in centralized purchasing on specification. The insistence of a department head or a minor official that he must have one certain type of material or equipment to which he is accustomed and that nothing else can possibly be satisfactory is frequently encountered by those engaged in buying for a number of separate units. Mr. Nicholson tells how he overcame this difficulty in one case:

> "A number of years ago the City of Milwaukee used forty different kinds of motor oil. It was found that a 3½-ton Sterling truck in one ward yard used one kind of oil while in another ward yard an identical truck had to have some other dealer's oil. Each foreman believed that his truck would not run properly on any other kind of oil, and it was reported that many bearings had been burned out where other kinds of oil were substituted. This condition was probably brought about through high pressure salesmanship and strong newspaper and magazine advertising. In one particular instance the instruction plate on an air compressor stated that only a certain make of oil was to be used. The superintendent in charge of the machine insisted that this particular oil be furnished. Without saying anything to him we substituted a barrel of motor oil complying with city specifications and passing tests in city oil testing machines. This barrel carried the name and trade-mark of the brand which the superintendent insisted on having. After two months' time he was asked whether the oil being used was satisfactory or not and he stated that it certainly was and that he did not wish to have any other oil substituted. Upon being told that he had used the city specification he was incredulous and from that time on he has not seen fit to question the make or grade of oil sent to him for his use."

Mr. Nicholson further states:

> "As a result of the study made on motor vehicle lubricants, the kinds of motor oil which the city uses has been reduced to four in number: heavy tractor oil, heavy motor oil for motor trucks, medium motor oil for passenger cars, and medium non-chatter oil for the old style Ford cars having transmission bands. We have also reduced the cost of this oil from prices which ranged between 58 cents to 75 cents per gallon in drums for 100 per cent pure Pennsylvania oil to around 45 cents for the same oil in bulk carload lots. The annual gasoline bill of the city was similarly reduced by the installation of bulk storage tanks on a city owned railroad siding where carload lots are received, from which the gasoline is distributed by city trucks to tanks of various departments, boards, and commissions.
>
> "The centralization of municipal buying affords an opportunity to set up definite specifications and to study the relation between quality and price of commodities. A buyer soon learns that the price cutter does not always offer 'dollar for dollar' value. In the majority of cases where there has been no general market decline, a reduction in price indicates a skimping in quality. Therefore, a definite specification should insure a certain standard of quality. This standard must be met by all bidders. To insure protection to the buyer and to all bidders, adequate inspection must be made of the articles delivered to insure their compliance with specifications. This inspection is very important as no matter how carefully the specifications for bids may be drawn, an unscrupulous vendor who bids low may try to 'get by' on poor quality of goods."

Buyers' Market Causes Departure from Standards

Unwise departure from standards to meet the demands of customers who are not acquainted with manufacturing technique is one result of the growing buyers' market, according to George G. Babcock, vice-president of the Central Lumber Mills, Incorporated, and E. C. Brandt, assistant works manager of the Westinghouse Electric and Manufacturing Company, who spoke at the May meeting of the Taylor Society at Columbus. They pointed out, says a report of the meeting in the June, 1930, issue of *Factory and Industrial Management*,

> "...that there is a growing tendency to depart from both simplification and standardization, both of which have proved their value in the shop.
>
> "Much of the economy in manufacturing during recent years has grown out of both simplification and standardization. As we get more deeply into a buyers' market, however, when the customer frequently not acquainted with manufacturing technique specifies all manner of special items instead of using the standard product, manufacturing departments are thrown into confusion and manufacturing costs increase.
>
> "It was evident from this discussion that we are in a period of weak selling, where salesmen, to secure orders, make concessions which ultimately react against the best interest of the customer himself, as well as against that of the manufacturing unit."

At the same meeting, Victor S. Karabasz, assistant professor of industry, at the Wharton School of Finance and Commerce, University of Pennsylvania, spoke on the subject of equipment standards. *Factory and Industrial Management*, reporting his speech, says:

> "There appears to be great need for improvement of maintenance management throughout the United States. Except in a few outstanding cases, this has been carried on in a careless, left-handed sort of way, without definite organization and without definite knowledge of maintenance costs and losses resulting from inadequate maintenance. Preventive inspection, however, is becoming the keynote of modern maintenance organization. Most manufacturing executives today know entirely too little about lubrication and the part it plays in manufacturing costs. Mr. Karabasz recommends that every organization, even small ones, undertake a special study of this subject, which he feels sure will amply repay those who do it. The field survey indicates a lack of adequate maintenance records. Those concerns that have set up a complete record system, showing original cost of equipment, the number and cost of repairs, and so on, have valuable historical data. They also have maintenance under control to much greater degree than do concerns without records."

New A.I.E.E. Standard for Switching Equipment

The American Institute of Electrical Engineers has issued a new standard covering switchboards and switching equipment for power and light, the standard having been approved by the Board of Directors of the A.I.E.E. on October 15, 1930.

The standard covers switchboards and switching equipment not specifically covered elsewhere in the standards of the A.I.E.E. as apparatus, but does not apply to industrial control equipment or communication switchboards and switching equipment. The standard is divided into the following sections: service conditions, rating, temperature limitations, name plates.

Copies of the standard may be secured directly from the A.I.E.E. or through the ASA Information Service at 30 cents per copy.

Comparable Price Quotations Difficult without Recognized Standards.

Even the quoting of prices for a commodity may involve difficulties when no widely recognized standards for the commodity exist, as shown by an item in the June 5th issue of *Iron Age*. Reporting the prices of non-ferrous ingot brass, *Iron Age* says:

> "As there are, as yet, no generally accepted specifications for ingot brass, it must be understood that each item listed below is a compilation representing numerous sales of metal known to the trade by the designation shown, but each item in reality including many variations in formulas. Until the program of standardizing the principal specifications, now progressing in cooperation with the American Society for Testing Materials, is completed, the following specifications will be understood to refer to 'commercial grades.'" (Following this, the specifications are given.)

Complete Reorganization of Italian National Standardizing Body

By a royal decree of July 18, 1930, the Italian national standardizing body was reorganized, becoming a division of the General Fascist Confederation of Italian Industry, briefly called "Confederation." Its new name is "Ente Nazionale per L'Unificazione Nell 'Industria," abbreviated to UNI.

The main features of the constitution of the new body are described below:

Purpose

Unification of standards and of general specifications governing production and distribution of goods

Establishment of unified types of products, instruments, and machine elements

Promotion of the diffusion and adoption of the unified standards

Membership and Dues

Trade associations adhering to the Confederation, and other technical, scientific, professional, and economic organizations and trade associations concerned with some phase of the standardization movement, are eligible to membership. Government departments interested in standardization work, and the Committee for Industrial Mobilization, always have a right to participate in the work, naming their own representatives.

The minimum annual dues are 25,000 lira (about $1300) for one representative. The minimum annual dues for additional representatives of the same member-body are 50,000 lira (about $2600) for each representative. No organization can have more than five representatives.

Board of Governors

The administrative functions are vested in a Board of Governors, the president of which is appointed by the Confederation.

The representatives of the government departments and the Committee of Industrial Mobilization are eligible to membership in the Board of Governors.

The Board of Governors elects from its own membership two vice-presidents and two other members, forming, together with the president, the Executive Committee. The Board, further, appoints a treasurer and two accountants who may be appointed outside the membership of the Board. The treasurer is ex-officio a member of the Board of Governors. The accountants have a right to attend its meetings.

Functions of the Board, the President, and the Executive Committee

The Board acts on requests for membership. It determines, if necessary, in consultation with the president of the Central Technical Committee (see below), the best means of furthering the standardization movement and of promoting the introduction into practice of the results of the work of UNI. It is responsible for securing the financial means for the work of UNI and approves the budget and annual financial statement. It establishes general rules for the functions of the Central Technical Committee and the technical committees, in so far as the establishment and the publication of standards are concerned. It approves the initiation and the handling of the work by the Central Technical Committee, promoting such activities as it sees fit. It harmonizes the activities of UNI with the basic principles of the Confederation.

The president represents UNI in its internal and external relations. He is responsible for its activities, and reviews the execution of the decisions of the Board of Governors and the regular functioning of the several subdivisions of the organization.

The Executive Committee cooperates with the president and exercises all functions delegated to it by the Board of Governors.

Technical Committees

The chairmen and members of the technical committees are appointed by the Board of Governors, which outlines their duties in consultation with the president of the Central Technical Committee. They are either experts designated by responsible trade organizations or by organizations interested in standardization, or they are independent experts in the field concerned.

The appointment of technical committees may be preceded by a general conference of the groups interested. The Board of Governors may also decide that technical committees be formed within the trade associations concerned or within organizations forming a part of UNI. Experts representing the several government

departments who are interested in any subject under consideration have a right to membership on the technical committee concerned. Draft standards resulting from the work of a technical committee are submitted for approval to the Central Technical Committee.

Central Technical Committee

This committee examines the draft standards submitted to it by the technical committees or the secretariat and coordinates them with standards that have already been approved or are in course of preparation, taking into account existing foreign standards dealing with the same subject. It decides whether a wider circle of interests should have opportunity to consider the draft. If so, the draft is widely circulated in order that it may be brought to the attention of those interested through the intermediary of the trade associations concerned, and through publication in the technical press.

Criticisms received through this procedure will be published, if possible, in the official publication of the UNI and given consideration by the Central Technical Committee in drafting the proposal to be submitted to the Board of Governors.

The Central Technical Committee consists of a president and two vice-presidents appointed by the Board of Governors, of the chairmen of the several technical committees, and of special experts appointed by the Board of Governors. The experts designated by the Committee for Industrial Mobilization and the government departments referred to above are also members of the Central Technical Committee. The president of the Central Technical Committee is ex-officio a member of the Board of Governors and of the Executive Committee.

Meetings

The Board of Governors, the Executive Committee, the Central Technical Committee, and the technical committees are convened by their respective presidents or chairmen when the latter deem it necessary. The meetings are valid, regardless of the number of persons attending. Decisions are taken on a majority of the votes of those present. However, ultimate approval of the decisions taken by the Board of Governors and the Central Techanical Committee on matters of standardization requires three-quarters of the votes of those present and at least two-thirds of the votes of the member-bodies. Proposals which have obtained, at a meeting, the approval of three-quarters of those present, but have not received the approval of two-thirds of the total membership in this way, are communicated (together with a record of the comments made in the meeting) to the members who were absent, inviting them to vote by letter ballot.

Duties

All officers, with the exception of the secretary, are appointed for a period of three years and are eligible for reëlection. The officers of UNI, and the chairmen and members of the technical committees, serve without compensation.

The president of the Board of Governors is authorized to propose the replacement of any member of the Board of Governors, the Central Technical Committee, or the technical committees, who has not attended three consecutive meetings.

Secretariat

The secretariat is headed by the General Secretary, appointed by the General President of the Confederation upon request of the Board of Governors. The General Secretary has the duty of formulating the proposals of the Executive Committee and is in charge of the organization and the functioning of the office and departments of UNI. He is also in charge of the execution of the decisions taken by the different divisions of the organization and of carrying out the functions and duties placed upon him by the president, the Executive Committee, and the Board of Governors.

Fire Bureau Tightens Rule

Strict compliance with the provisions of the National Electrical Code to prevent over-heating the sockets and fixtures' wires in show windows will be required by the New York Board of Fire Underwriters according to the August, 1930, *Electrical Installation Record*. The *Record* states:

"The Bureau of Electricity of the New York Board of Fire Underwriters has found that due to the use of gas-filled incandescent lamps both sockets and fixture wires, particularly in show windows, are subject to temperatures in excess of 120 degrees F. This temperature seriously affects rubber insulation on wires and fiber linings on sockets.

"It has been decided that more strict compliance with the National Electrical Code must be secured in this matter. Consequently, where lamps of 75 watts or over are installed, only approved slow burning or heat resisting insulation will be acceptable. In such locations, sockets having fiber or paper insulation will not be approved. The board states that this requirement will be rigidly enforced in New York."

National Standards for Parts of Motors Established by German Body

The extent to which national standards for the parts of electric motors have been established in Germany is illustrated by the accompanying photograph of an induction motor which has been on exhibition in Germany. Only the most important of the many German standards applied to electric motors are indicated, according to the *Uebersee-Post*, Leipzig, Germany, which says in part in a recent article:

"At the present time, Germany is using standardized working materials, such as cast iron for the frame, dynamo plates for the magnetic part, copper for the windings and mild steel for the axles, and definite arrangements have been made with the producers of iron and other metals, regarding the essential qualities, with the object of ensuring supplies of working materials of uniform and satisfactory quality. For similar reasons, the dimensions and the character of the surfaces of the semi-finished parts which are made from these materials (shafts, plates, and wires) have also been standardized.

"Standard measurements have also been adopted for the single parts of the motor, ball and roller-bearings, belt-pulleys, screws, nuts and pins, with the object of permitting wholesale production of these parts by the manufacturing industry, and simultaneously, to open the door to 'Free Trade' in these articles.

"All parts of the motor are assembled on the 'DIN' system of fits, i.e., on a system of measurements which is only intended to serve technical purposes" [roughly corresponding to American Standard B4a-1925 "Tolerances, Allowances and Gages for Metal Fits"] "and which will permit the manufacture of mechanical parts so that they will fit together without any subsequent machining. This method will offer the advantage that the final owner of the motor will be able to replace worn parts accurately and without experiencing any difficulties.

"Moreover, standardization has also been adopted to include the external shape of the motor. Arrangements have been made among the German concerns to fix the height of the shaft extension above ground level, the actual dimensions of the extension, the spacing between the holes in the base, and the designation of the type of the motors, which may be of a very varied character, depending on the services required."

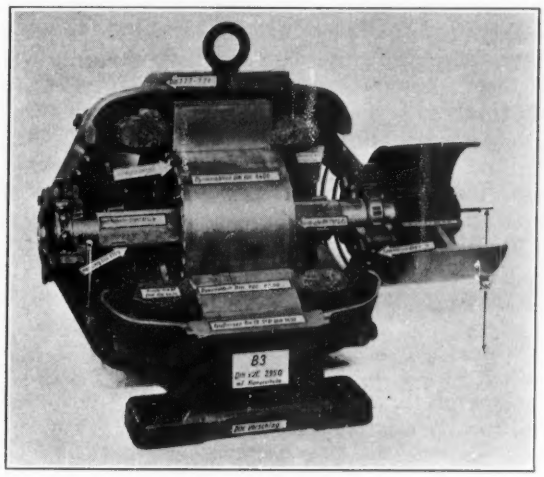


Exhibit of German Motor Standards

The following standards are among those used in Germany in the manufacture of motors:

DIN 777–778—fits between cylindrical parts

DIN 1768—copper strips

DIN 667—steel for shafts

DIN 1709—brass

DIN VDE 6436—copper wire

DIN VDE 6400—steel sheets to be used in electric generators and motors

DIN 1691—cast iron

DIN VDE 2950—the several types of electric machines, the above type being designated by the standard symbol B3, with pulley

DIN Vorschlag marked in the base of the motor indicates that the distance between bolt holes in the feet was standardized

DIN 1542—steel sheets, the particular grade to be used here being designated by the standard symbol St. 37.21

DIN 1767—round copper bars

DIN 177—steel wire

Standards for Office Furniture Established by Czech National Body

The result of what is probably the most important foreign standardization work on office equipment appears in draft form in the bulletin of the Czechoslovakian standardizing body. On desks, the principal subject treated, the standardization sets up height and dimensions of the top for three sizes, and inside dimensions of the side and center drawers, of which the location of partitions is shown. There is also given the height of the desk from the floor. The working surface of the desk is set at 79 cm above the floor, a figure uniform for flat-top and roll-top designs. The whole dimensioning plan is based upon the standard series of paper and card sizes now adopted in the following countries: Austria, Belgium, Czechoslovakia, Finland, Germany, Holland, Hungary, Norway, Poland, Russia, and Switzerland.

General Dimensions Established

General dimensions are established also for roll-top desks. This gives in similar form the basic dimensions of a standardized roll-top desk in three sizes. General dimensions are given in the same form for work tables, including the size of the center drawer. Other items of office futniture included are flat-top desks on legs; roll-top desks on legs; flat-top typewriter desks and desks with disappearing typewriter mechanism in the center; storage cabinets with sliding panel (roll front) for writing materials; file cabinets with sliding panel; vertical file drawers; card cabinets; drawing tables and drawing files.

Quality specifications are given in brief and fairly general form.

These draft standards may be of interest to American firms who, while not concerned with the particular designs and dimensions used in Czechoslovakia, may find the standardized designs of some service in establishing a general control through standards and specifications over their office furniture purchases. It should be possible by use of this method to obtain considerable competition in supply, and at the same time set up a satisfactory degree of interchangeability and flexibility in the equipment selected. A few American firms buying very large amounts of office furniture do employ some such system of standardization of important dimensions such as height, type or arrangement, and quality of construction, leaving the maker of the equipment considerable latitude on details of design and dimensions.

British Journal Wants Accessories Standardized

The wastes involved in the profusion of types of wiring accessories in England are commented on by the *Electrical Times* of London which, in a recent issue, says:

> "If ever standardization was badly needed it is in the case of wiring accessories. It has always surprised me that a body so progressive and farseeing as the Cable Makers' Association should for so long have tolerated a state of affairs such as that which obtained in the past. I know that contractors have torn their hair distractedly at the problem presented by many wiring systems, each with its advantages and each with its disadvantages. Standardization is always a step in the right direction, but in this case it is a step with seven league boots. One is a bit apt to let one's thoughts centre too much on new installations. Here it was always possible for a contractor to concentrate on one particular wiring system, allowing what he considered to be the best feature of a system to regulate his choice while putting up with the worse features. But new installations do not, unfortunately, represent the alpha and omega of installation work. If the contractor was to be ready to execute repairs or make additions to existing installations he was constrained to carry a grotesque stock of accessories. Even then, in the case of small jobbing work, he had to send first to find out what system he had to work on and after this waste of time to sort out the appropriate accessories, thereby incurring a serious risk of becoming the butt of the time-honored jest about plumbers and their tools. However, better late than never, and the Cable Research Committee are to be congratulated on their work."

Standard for Electrically Heated Appliances

The Underwriters' Laboratories have just issued a standard covering requirements for electrically heated appliances. Sections of this standard deal with mechanical assembly of appliances, heating elements, wiring, terminals, heat and electrical insulation, switches, cords and plugs, rating, power input, temperatures, and markings. Copies are available through the ASA Information Service or directly from the Underwriters' Laboratories, 109 Leonard Street, New York.

Secretary of Garment Manufacturers Finds Substandard Replacing Standard Goods

That the manufacture and sale of substandard articles not only displaces in the market the products of reputable manufacturers but also causes an actual reduction in the demand for the product is asserted by A. F. Allison, secretary of the International Association of Garment Manufacturers, in an interview published in the *New York Times* of November 23. Mr. Allison urged the establishment of minimum standards for manufactured products for the protection of the consumer, also.

"It is almost any man's guess as to what percentage of goods produced in various industries should be rated as substandard," Mr. Allison declared, "but it is certain that each substandard article displaces in sale and use an article of standard or better than standard character. Taking the majority of lines of merchandise sold over the retail counter to consumers, it is probable that in no case is the percentage of substandard goods less than 10 per cent of the total and from this the percentage may easily run as high as 60 per cent.

Legitimate Merchandise Replaced

"The sale of substandard goods, not identified as such when offered to the consumer, not only displaces an approximately equal volume of legitimate merchandise but also exerts a tremendously depressing influence upon marketing conditions involving all the many varieties of unfair competition. Vicious price-cutting tactics, buyers' false representations of competitive offers, and many other trade evils arise from substandard merchandise.

"High costs of distribution to a considerable extent are the result of lack of customer confidence which has developed from lack of merchandise standards of an impartial and nationally recognized character.

"It seems to me entirely possible that if the production of substandard goods now being made largely or solely for price-cutting purposes could be reduced to a minimum, the remaining production made up to or better than nationally recognized minimum standards might in many industries represent only a reasonable balance of supply and demand.

"The first step in any such program is to obtain the cooperation of the most competent manufacturers in any industry who are qualified by experience and technical knowledge to draw the line between goods that are substandard and those which comply with or exceed standard requirements. Each industry will differ, more or less, as to the particular requirements for an established minimum standard. The most important thing to do is to make a start. To seek perfection and unanimous agreement before the first publication of standard requirements is merely to postpone action forever. The Department of Commerce, through the Bureau of Standards, recognizes the need for action along these lines and issues United States Commercial Standards, which provide for a yearly check-up through a permanent committee.

"The second step in the development of standardization is to provide for an impartial method of identifying goods which meet or exceed the minimum requirements. When all goods of standard or better than standard quality are uniformly identified, this means that substandard goods, unless misrepresented or fraudulently marked, cannot be sold in direct price competition but will, when necessary, be disposed of at proper price differentials.

"When both the first and second steps have been taken in this program, then both individual and collective advertising and merchandising activities will operate under the protection of a 'stop-loss' order at the line drawn by the minimum standard requirement, and the undoubted right of the consumer buyer to receive fairly made merchandise at a fair price will be less frequently disregarded.

Benefit to Manufacturers

"The establishment of minimum standards for consumer goods should benefit manufacturers, distributors, and consumers. The benefit to manufacturers ordinarily will be expressed in terms of relief rather than in any immediate increase in net profits. The competition between manufacturers of legitimate merchandise is usually clean and healthy no matter how hard fought.

"And at this time, when so much emphasis is being laid upon what is termed

the folly of over-production, it seems particularly desirable that all factors involved should give their earnest attention to ways and means for reducing the percentage of substandard goods with resultant reduction in waste and loss all along the line from producer to consumer."

International Standards Aid Foreign Trade

An interesting appreciation of the significance of standardization in foreign trade, by a keen observer of salesmanship in action in foreign fields, appears in the following quotation from the *Nation's Business*, September, 1930. The quotation is from an article, "The British Philosophy of Business," by William McFee, the eminent ship engineer-literary man.

> "The way to sell a tractor to a rich Turkish farmer..... (said a Frenchman considering an American agricultural machinery agency in Smyrna) was to drop in for a few days and smoke and drink coffee with him. In due course the conversation would come round to the subject of machinery.
>
> "The young Frenchman said he could not make the American firm understand this. I said I could quite believe him. Long before, we had been unable to make American car manufacturers understand that there was no market for them in England until they standardized their screw-threads and so forth. Nobody was going to wait a month to get delivery of a spare half-inch nut with an American thread.
>
> "Technical men complain that the public is unaware of the important work of the Standards Committee; but technical men themselves resisted the idea of international standards for generations. An American light bulb would not fit a foreign socket or voltage, to take a well-known instance."

Underwriters' Standard for Enclosed Switches

The Underwriters' Laboratories has just published a new standard for enclosed switches. The standard covers enclosed switches and air-break switches, but does not cover snap switches. Copies may be obtained from the Underwriters' Laboratories, 109 Leonard Street, New York, or through the ASA Information Service.

Standards Help to Maintain Confidence in Product

In a previous number of the ASA BULLETIN (September 1930), reference was made to the importance of meat standards in maintaining consumers' confidence in meat quality, and hence a high level of consumption of meat as against other products. The following, on the same subject, is quoted from the *United States Daily* of October 8th, on account of its interest for those doing quality standardization work in other lines:

> "Probably no single thing would contribute more to placing meat consumption on a reasonable and stabilized basis than to bring about a situation in which the meat, consumer would always be certain to get exactly what he expects in the way of grade and quality. Disappointment in meats, whether raw or prepared, tends to drive the consumer to other places of business or may lead him to substitute other dishes in place of meat."—R. W. Dunlap, Assistant Secretary of Agriculture, before National Restaurant Association, *United States Daily*, October 8th.

German Book of Standards

The German national standardizing body has just issued the fourth revised edition of "DIN Taschenbuch 1," under the title of "Basic Standards." The table of contents includes:

Units, symbols, nomenclature

Sizes, pictures, drawings, graphic presentation, lettering

Basic technical standards:
- Diameters, springs, shafting, keys, tapers
- Rivets, bolts and nuts, threaded pipe connections, pipe lines
- Wrench openings, miscellaneous

Screw threads

Fits and tolerances

Numerical index

Subject index

This 200-page book contains German text with many tables and drawings. It reproduces in half size about 100 German standard sheets (DIN sheets) on the above subjects.

Copies may be obtained for $2.00 from the ASA office.

German Exporters Gain through Standardization

The advantages of German standardization and its significance for the exporter was the subject of a paper presented by Mr. Fritz Barthel, an engineer, before a conference of German exporters and the Federation of German Industries, held at Hamburg, Germany, early in July. Extracts from this paper, which will be of interest to American manufacturers and exporters in relation to American industrial standardization work, follow:

"Especially here at the water front, it may be interesting to know that the shipbuilding industry also has made large savings through standardization. Thus, for example, in each of the steamers of the Albert Ballin class (Hamburg-American Line), two and one-half millions of gold marks in standards have been incorporated. That is, this amount has been saved by the fact that in building the ship, standard parts were used. However, this example does not apply only to direct savings, but also shows the advantage of interchangeability. For example, when winches used for loading and unloading the ship have gone out of order, it is now possible to take over, from the next ship in the harbor, a replacement which will fit into the existing conditions without any difficulty. Obviously, it would have caused much more trouble and cost if the ship had been obliged to go to a shipyard, or perhaps even to return to the yard where it was built in order to have the damage repaired. . . .

"The question now arises, what advantages the dealer may derive from this standardization work. In the following ten items, the main sources of savings are given:

"1. Standardized sizes of parts, together with detailed indications of dimensions and material, and detailed conditions governing the supply, may be found in a book of standards dealing with each branch of industry wherein the work has been completed.

"2. An index card system published by the German national standardizing body gives a review of the manufacturers and dealers. Through distinct indication of the standard parts by symbols or otherwise, misunderstandings and confusion in inquiries and orders are avoided.

"3. It is easy to compare prices in cases where bids are submitted by dealers or manufacturers.

"4. The abbreviated designations of the standard parts reduce the cost of telegraphic communications.

"5. Bids accompanied by symbols will become superfluous in the course of time, hence a saving for the manufacturer and, indirectly, for the exporter.

"6. The term of delivery can be guaranteed, as the manufacturers keep the standard product in stock or are in a position to supply it at short notice, by having the necessary production equipment, possibly combined with continuous production flow.

"7. With regard to stock kept by the manufacturer, distributor, and retail dealers, the advantage consists in the fact that the reduction in number of types and sizes considerably increases the facility of controlling the stock. The stock can be kept much smaller and nevertheless be complete; hence, there is required less invested capital and consequent loss of interest.

"8. Difficulties experienced with machines composed of non-standard parts will no longer occur. Parts manufactured in accordance with the German standards completely guarantee interchangeability. The exporter even mentions the service idea to customers as a primary factor.

"9. Millions are saved each year through standardization of methods of packing goods. (The annual cost in Germany to industry and commerce amounts to 1.8 billion marks.)

"10. Reduction of the price and quality specifications of all industrial export goods results in the ability to compete with the United States, England, and other countries.

"Standardization, therefore, makes it possible to increase exports to a considerable degree, as deliveries can occur more cheaply and rapidly, while the quality of the goods is more uniform. In addition to this, it often happens that in bids asked by foreign countries, especially those across the ocean, prices are based upon British or American standards and purchase specifications, which have already become known through translation, the latter thus serving as a basis for export to the firm whose bid is accepted. If a German firm gets the order, it is often obliged to adhere to these specifications at great expense. For example, it may be necessary to use special machines or even to purchase certain parts from the United States or England. Therefore, the opportunity of supplying products at low cost would be very greatly increased if German standards and purchase specifications were available in the language of the country concerned. These standards should

be at least equivalent, if not superior, to the foreign standards."

In connection with the latter point, the author of the paper discussed the important question of translating German standards into foreign languages.

Federal Specifications Index for 1930 Published

A copy of the new index to Federal Specifications (Federal Standard Stock Catalogue Section IV) revised to October 1, 1930, has just been received at the ASA office.

This index lists, both alphabetically by title and numerically by specification number, all federal specifications approved up to October 1. The lists also show the original Federal Specifications Board number, the Bureau of Standards Circular number (when such circulars have been issued), and the price of the specification.

The principles upon which government purchase on specification is based are outlined in the foreword. In the selection of specifications the Federal Specifications Board is collaborating with industry, and is coordinating the interests of the government and the producer "in a manner which is considered best to meet the requirements of the government as a consumer."

"In recent years," the foreword continues, "attention has been concentrated upon the material and mechanical side of production and distribution in industry, and the modern manufacturer, knowing accurately the buyer's needs, can determine the most suitable material and the most economical method of fabrication to obtain the desired results.

"The specification is the common meeting ground for the producer, distributor, and consumer, and it is at once a statement of the consumer's needs and what the producer is required to supply. Purchase by competitive bids on specifications is preferable to purchase on sample. The latter method implies that each bidder's product must be considered independently, and it is often a very difficult matter to decide between different combinations of quality and price.

"A proper specification is one which enables bidders to know exactly what is desired or required and what procedure the purchaser will follow to satisfy himself that the specification has been complied with.

"A given purchaser, as the Government, should so adjust requirements, when possible, as to meet current industrial practices, and the committees of the Federal Specifications Board have been instructed to use existing commercial specifications in all cases in which the Government's needs may be reasonably satisfied by this procedure."

The index conforms to the new small size ($7^3/_4$ by 5 in.) now being used for all federal specifications (the same size as the Navy specifications). Copies will be supplied, upon request, by the ASA Information Service.

Advertising Valuable as Standardizing Medium

The September 17, 1930, number of *Advertising and Selling*, in a letter to the editor from Jerome Sill of the Britt-Gibbs Advertising Company of St. Louis, contains the following interesting side-light on the relation of standardization to efficient distribution:

"In its broadest aspect," says Mr. Sill, "the value of advertising, to the consumer, is entirely in its function as a standardizer ..... I do not believe that the chain store is serving the best interests of the people in operating on the basis it does today.

"Were these chains, however, to standardize their buying by setting definite specifications for all merchandise, and then grading comparatively both their own and the advertised brands, such a test would be fair but, I sincerely believe, rather ruinous for private brands.

"Some day, no doubt, we will come around to a revised 'Money's Worth' method, to protect ourselves. I rather visualize the day when reputable manufacturers will advertise cooperatively and use joint identifying marks of quality, so that blind merchandise will cease to be. Then, perhaps, the chain stores will be forced to prove their mettle as economical distributors of meritorious merchandise—unless price alone is a great deal stronger argument than I imagine it to be.....

"It would be interesting to see this subject gone into a little more thoroughly, backed up by definite facts and figures from all sources and then aired in *Advertising and Selling*. It is a subject that should be of prime importance to advertising men."

Standards for Use in Designing Parts Recommended

The lack of standards in the design of parts was listed as one source of inefficiency by Kenneth M. Sloan in a paper read before the Institution of Engineers and Ship Builders in Scotland. In the paper, quoted in *Machinery Market* of London, Mr. Sloan declares that the designing department may itself be directly responsible for the lack of standardization of parts.

"It frequently happens," Mr. Sloan says, "that the chief designer is an obstinate opponent of standardization, as he considers it restricts progress and inhibits inventive ability. Naturally, moderation is required with standardization as in other matters. It should not be carried far enough to hinder legitimate progress, but as applied to many details, such as handles, levers, hand-wheels, etc., considerable economies can be effected in the workshop by its adoption. Frequently, parts are designed which are nearly similar and might have been made similar had the principles of standardization been considered.

"When parts are made dissimilar unnecessarily, extra work is involved in the drawing office, extra storage in the workshop, and where castings are concerned there is extra pattern-making, storage, and recording. Other losses in the course of manufacture might be mentioned as a result of the unnecessarily large variety of parts. For instance, a certain engineering firm built five standard sizes of stationary engines of 6, 8, 10, 12, and 14 hp, yet because each type was designed for a different horsepower, the details of each varied in size and shape; and great opposition was shown to the adoption of any detail to suit more than one type of engine. Investigation showed that in some cases the detail parts for the 10 hp engine were actually smaller than the corresponding parts for the 8 hp engine, and subsequently it was found possible to reduce considerably the number of parts used. Where formerly five different sizes of a certain part were made, two were found to be sufficient, that is, one size for the 6, 8, and 10 hp engines, and another for those of 12 and 14 hp. By this means the number of parts to be kept in stock was reduced, and the firm was able to manufacture the necessary parts in greater quantities.

"The principle of standardization may be adopted where there are slight deviations from the original design. In investigating the practice in a marine engineering drawing office, the author examined the drawings of air and circulating pumps of a certain size. It was the custom to put these two items together on the same plan. Altogether ten different drawings were found. The air pump was practically the same in each case, the only difference being the addition of, or a change in the position of, some small part, such as a flange or a bracket. Consider for a moment what this meant.

"(1) An expensive new drawing had been made in each of the ten cases, and the many figures involved checked by a responsible official.

"(2) The pattern maker in each case had checked every figure on the new drawing, and compared it with the old pattern, to make sure that the old pattern would be suitable for the new design.

"(3) The record and cost department had to examine each drawing carefully, to ascertain the extent of the change made.

A new method was introduced, and the first drawing made was regarded as a standard, and the pattern received a standard pattern number. If a part were required with a slight modification from the original (such as an extra flange), the addition was shown on the original drawing; or, what was better still, a new drawing was made of the original pump in outline only and without dimensions, but with a note, 'For details, see original drawing No.....' If the pattern number were 100 in the first instance, the new number became 100a, which gave notice to those concerned that the original pattern should be used, but with the alterations as shown in the outline drawing."

French Adopt Standard for Preferred Numbers

A series of preferred numbers, now generally recognized as a valuable tool in performing standardization work, was first conceived by the Frenchman, Colonel Charles Renard. During his connection with the aeronautical department of the French army in the seventies, he was surprised to find that there were as many as 425 different kinds of cables for mooring captive balloons. After having analyzed the problem, Colonel Renard found that the needs of the balloon section could be taken care of by as few as 17 cables. The diameters of these he based on a system of preferred numbers.

Although this happened as far back as 1875, the principle of applying preferred numbers did

not spread to industrial practice for a long time. In fact, it was not taken up again to any considerable extent until after the war when national work on industrial standards was started in several countries.

In February, 1930, the French national standardizing body approved a standard on "Preferred Numbers," which is based on the same principles as the series Z17-1927 recommended to American industry for a try-out in practice some years ago by a committee appointed under the auspices of the ASA.

A noteworthy feature of the new French standard is found in a footnote which calls attention to the close approximation between the ordinary fractions and multiples of inch sizes on the one hand, and certain values of the preferred millimeter sizes on the other hand, as follows. The first line gives the values in inches; the second line the corresponding values in millimeters; and the third line the primary series of preferred numbers. ($\sqrt[10]{10}$-Series, see Z17-1927.)

In.[1]	4	2	1	1/2	1/4	1/8	1/16	1/32	1/64
Mm.	101.6	50.8	25.4	12.7	6.35	3.17	1.59	0.794	0.397
P	100	50	25	12.5	6.4	3.2	1.6	0.8	0.4

This approximation between inch and millimeter values seems to be close enough to be useful in cases where a coarse degree of interchangeability between sizes given in either system is sufficient. This would apply, for example, to size of books, to many products made of wood, glass, porcelain, and hard rubber, and to large groups of metal castings; that is, in all cases where the sizes of the products call for only low precision of dimensions. It thus might prove a valuable factor in developing standards acceptable both to inch and metric countries, an activity now regularly going on under the auspices of the International Standards Association (ISA). Of course, if high accuracy is required in converting inch values into millimeters, and conversely (as in the matter of fits between cylindrical parts), the approximation between the two above series would not be close enough. However, such cases belong in a class by themselves, for which there is reason to believe a solution can be found if necessary.

New Committee Representative

Dr. A. K. Graham, of the University of Pennsylvania, has succeeded M. E. Stewart as representative of the American Electroplaters Society on the sectional committee on Specifications for Zinc Coating of Iron and Steel (G8).

[1] In.—inches; Mn.—corresponding value in millimeters; P—Primary series of preferred numbers.

Standardization Encourages Progress Says Writer

The need for the careful administration of standards to prevent their becoming obstacles to progress rather than an aid to progress is well expressed by J. R. Cantley in the February, 1930, issue of *Aviation*. Mr. Cantley's article, "The Standardization of Airplane Wheels," which is quoted in the June issue of *Metals and Alloys* says:

> "A standard, in the American automotive industry of which airplanes are a part, is a tool to be worked with or discarded, not an idol to be made sacred and worshipped without logic or thought.
>
> "Putting it another way, American standards are a target to be shot at and to be removed if they can be filled full of holes. Standards are set up for the economic advantage of an industry and unless they can prove their worth, they should be and are, discarded.

Fluid Standards

> "In the basic sciences such as physics, basic laws or standards are set up and last usually a long time, until later research proves the necessity for modification. In industry, especially the newer ones such as aeronautics, standards are set up as signposts of the direction of economic manufacture and maintenance. Absolute individualism is as dangerous in industry as it is in government. On the other hand, slavish conformity and fear of change are even worse.
>
> "The automobile industry in America has proved the value of fluid standards actively administered and watched over. It has proved equally clearly the fact that if standards are set up which are ill advised, or ahead of their time, they will not be used. Cancellation of poor standards is as important as the framing of proper ones. Fluidity of the standards system in new art is vital and if they are so regarded, they are a most important part of the economic structure, leading to reductions in costs, which are vital to success. If they are kept static as in the case of less happily situated government agencies than those for air, they are a handicap which is sometimes almost fatal.
>
> "Let us standardize in a fluid manner and advance; not in a solid manner and ossify. Let us truly standardize and progress."

Building Managers Report Savings from Cooperative Purchasing

Buying on specifications and use of "pre-specification" method pay dividends to Spokane building owners

Important savings by building owners through cooperative purchasing, with attendant standardization and simplification, was reported in the *Proceedings* of the Twenty-first Annual Convention of the National Association of Building Owners and Managers, 1928, recently reviewed in the ASA office. In the City of Spokane, cooperative purchasing has paid dividends higher than the total dues of the members of the local association.

"Every other association," says Mr. Charles A. Gonser, secretary of the Spokane Association (referring to local associations of building and apartment owners in other cities) "can also save more than the entire dues of their membership....This $2000 is only a very small sum but, nevertheless, it represents a cash dividend each year which is not earned by the member. It is earned for him by the association and no physical or mental exertion is necessary for him to receive it....Cooperative purchasing accomplishes many things other than that of the saving involved. It accomplishes standardization and simplification of products which are certain to reduce the ultimate cost to the consumer. In our city there were hardly two buildings using the same products before we attempted cooperative purchasing. What little cooperative purchasing we have done has served to standardize these products. Some building owners who had not analyzed the products or investigated them systematically were using products that were injurious to their buildings and equipment.

"The purchases of the buildings individually did not justify (in the building manager's mind, at least) the expenditure of time and money to make the necessary tests and analyses of these products. But when the purchases are pooled, the volume is sufficiently large to justify the expenditure of time and money in investigations of the various products. The expenditure of time and money to any one individual member or building is small compared with the total quantity purchased, and the cost to each unit of the commodity purchased is only a small fraction of the cost. I recall one case of a test of linseed oil and vegetable oil soaps which we made. One of the simple tests we put the soaps to was to make a solution of each soap, allowing for the same soap content, and placing each soap sample in a separate can. A number of small pieces of varnished woods were then immersed in this solution and left for the same length of time. Of about a dozen samples of soaps most of them acted as a varnish remover instead of a soap and only two out of the lot failed to injure the varnished surface. This may seem to some as an impractical test but this test was only one of the factors governing the decision on soaps."

One practice of the Spokane organization has been common in the medical and engineering professions, namely, that of requiring a statement of what the product consists and what its performance is, made on the responsibility of the producer. This is based on the assumption, which is justifiable with respect to a great many chemical compounds and mixtures—paints, detergents, polishes, and so forth—sold to building owners, that there is often no secret about such proprietary products and that such products for all practical purposes are sufficiently determined by an analysis which can be made by an independent analyst at a moderate cost, when such analysis is not made available by the producer.

"We ask them to submit analyses and in many cases we give specifications. We also request a sample of the product. When these quotations are received, the prices are checked over and a card file is used for each product. All the firms bidding on that particular product are listed on the card, with the prices quoted, analyses, and comments.

"We then hold several meetings for the selection of these products. We make the first meeting one of our regular weekly meetings and have all the prices and samples of the products on hand. If it is

a product that requires a special investigation, test, or analysis, the meeting decides so. If it is one that can be selected on good judgment, the selection is made at that meeting and all members participate in the selection and give the benefit of their experience and advice. I think this is decidedly different from what other associations do. An order book is at hand and each member is in turn asked as to his desires, and an order blank is filled out for his requirements. In this manner we take the products one by one until all of the purchases have been made. This usually necessitates several meetings and these are usually held at 4 o'clock, lasting about an hour at the Association office. I think that in this manner more interest is created than would be otherwise if a selection of products were made entirely by a committee and then the selection given to the member. These meetings are very interesting and educational and the attendance is always good at every meeting. One thing we have to guard against, that would do a great deal toward defeating the purpose of the cooperative purchasing activity, is that of showing favoritism for one firm or another. The selection must be on quality and price and we place quality first and price second.

Unprejudiced Selection Assured

"Wherever possible we conceal the names of the firms who make the bids. In the case of purchase of toilet papers, we removed the labels from all the various packages of toilet paper and numbered them 1, 2, 3, and so forth, and each member indicated his choice by number. A pool was then taken to ascertain how the various papers stood as to quality. Until this was decided, no prices were revealed, this being kept so that members would not be influenced against quality by a low price. After the selection was made for quality, this was then followed by selection by quality and price and then firm names were given to those assembled, for final action. This may seem to some as an exaggerated process but there is nothing that will defeat your purpose quicker than to have some of the firms that are making the bids feel that favoritism is being shown to some firms regardless of price or quality. If they get that impression they will refuse to bid in the future or at best will not go into it enthusiastically."

The above is given as an important practical demonstration of what might be called the pre-specification method of purchase selection and the method which, in general, suggests itself for use as a forerunner of specification buying by firms and association groups which are not yet in a position to issue specifications for the principal articles which they purchase. The difficulty with the specification method, pure and simple, in case of buyers who are not technically trained and experienced, is that such buyers are generally unable to see why the specific requirements of the specification represent what might be satisfactory requirements for their purposes The process of buying under specification is so little understood among purchasing agents and informal or Jack-of-all-trade buyers in various types of industry that they are likely to assume that the requirements set down in specifications have been arbitrarily arrived at and merely represent somebody's personal view of what specifications should be. They do not appreciate the long array of laboratory data that may have been examined, the hours-long discussions of conflicting points of view in a technical committee of the Federal Specifications Board, technical society, or trade association, and the necessary consideration, and sometimes compromise, that must be given to the often strongly antagonistic interests of producers, consumers (organized and unorganized), and technicians. Lacking this "educational" background, it may often be necessary to carry out a procedure of the type outlined in the foregoing extract from Mr. Gonser's address which is here presented (with a few omissions for the sake of compactness) for the general advice and guidance of institutional and corporate buyers.

Time Saving Important

Mr. Gonser lays special emphasis on a factor which is omitted here for the sake of brevity, as to the saving of time achieved by minimizing the number of salesmen who need to be interviewed. Buying on the basis Mr. Gonser describes permits purchase of supplies in large quantities, and against future requirements, on a long time basis, making unnecessary a large proportion of the interviewing activities that would otherwise be essential.

Another interesting item appears in the following quotation:

> "When we first talked of cooperative purchasing, we did not receive a great deal of encouragement from the supply houses; in fact, they tried to discourage us, but now that it has been in operation, they are strongly in favor of it."

Readers of the BULLETIN may be interested in three reprints available in the ASA office

which develop at some length topics related to the above. These reprints are: "How Specifications Bring Savings," reprinted from a paper read before the National Association of Purchasing Agents, at its Annual Convention in 1929; "Improving Purchasing Methods through Specifications," reprinted from the *American City*, April, 1930; and "A Scientific Approach to Institutional Buying—the institutional purchasing agent has a unique opportunity to develop test and specification technique," reprinted from the *Educational Buyer* of March, 1930.

Copies are available without charge, through the ASA Information Service, to those requesting them. In the case of corporations having a number of buyers in different plants, several copies will be sent if desired.

Tables of Preferred Numbers Available

The Czechoslovakian Standards Association has published in its bulletin (*Berichte der CSN*) a paper by Professor Vladimir List, its president, on preferred numbers, including a tabulation which may be convenient for organizations interested in the use of geometric series in machine design. The tables given have, in addition to the usual 10, 20, and 40 series, others giving 3, 4, 6, 8, 12 terms for each order of magnitude (i.e., the range from 10 to 100, 100 to 1000, etc.). Tabulations are given also of rounded preferred numbers having two and three significant figures, with columns showing differences from term to term, and deviations, in per cent, of the rounded figures from the mathematically exact values.

As has been noted in previous BULLETINS, the ASA has available for inquirers a number of reprints on the subject. A table of preferred numbers informally approved by the ASA and recommended to industry for a period of trial in practice is available through the ASA Information Service at 20 cents per copy.

Australian Spring Steel Project

The Automotive Manufacturers' Association of Australia has requested the Standards Association of Australia to initiate a project for the standardization of the qualities of spring steel. One purpose of the project would be to reduce the number of types of steel used to comply with the various specifications for spring steels demanded by importers of cars and trucks.

Municipal Purchasing Body Urges Use of Specifications

The need for bona fide purchase specifications to replace the whims of purchasing agents was brought to light in an investigation into the conduct of municipal affairs in Atlanta, Georgia, reported in the November *Purchasing Agent*. The investigation has led to the formation of a purchasing committee which is now helping to eliminate the causes of abuses of the purchasing system.

"Two weaknesses in particular, which have seriously hampered the effectiveness of the purchasing department," the report says, "have been attacked by the committee, on the evidence of several transactions involving the purchase of supplies for the Grady Hospital. The first of these had to do with the practice of using trade or brand names in specifying supplies. A number of sales representatives testified that their companies could not quote on the articles requisitioned by hospital authorities, as these could be supplied only by a single manufacturer. This situation, which is not unusual in governmental purchasing, is particularly insidious as applied to medical supplies, where human suffering and life are involved and the psychological necessity of supplying the exact material specified by professional heads of institutions is often stressed. To combat the situation, the following policy has been formulated by the committee:

"'That department heads' requests for articles of specific brand or manufacture be ignored, and that the purchasing agent get competitive bids from all manufacturers of similar products, regardless of brand name.'

"The second point of investigation was the abuse of the emergency order privilege on the part of department heads. In spite of efforts of the purchasing office to keep this class of purchases at a minimum, supplies to the amount of more than $300 in some instances had been requisitioned by the hospital on an emergency basis. The committee has announced as its policy:

"'That "emergency" purchases made by departments without allowing time for competitive bidding be held to a minimum.'

"A third development which will result in savings of considerable magnitude to the city is the recent decision to have disinfecting fluid, used in large quantities by several of the city departments, manufactured by the Health Department. The

net cost under this new arrangement is approximately 53 cents per gallon as compared to an average price of slightly more than $2 per gallon in the open market."

Czechoslovak Electrical Regulations Published

The technical committees of the Czechoslovak Electrical Association, in Prague, have been working for ten years on "Regulations of the Electrical Association of Czechoslovakia" (Electrotechnicky Svaz Ceskoslovensky) and on electric standard specifications. Three volumes of the regulations and of the standard specifications were published in the years 1920, 1923, and 1925. The standard specifications were omitted in the 1930 edition of the "Regulations of the E.S.C." which has just been published. The "Regulations of the E.S.C." (similar to the "National Electrical Code," ASA, C1-1930) is a collection of rules approved by the Czechoslovak Government departments. The book includes data on the following: units, symbols, electric machines, materials for electric installations, lighting, overhead transmission network, crossing of wires, service instructions, special electric installations, installations in mines, electric railways, installations for electro-medical purposes, electrical communication, radio apparatus, international rules of the International Electrotechnical Commission, legislation, uniform terms, and index of standards.

The regulations have been drawn up by the special technical committee of the E.S.C. in cooperation with consumers, producers, people interested in electrical engineering, and the public board. Six Czechoslovak government ministries, 33 public boards, schools, and organizations, 26 electric power companies, 42 electric manufacturing companies, and 295 individuals cooperated in this work.

The regulations are of great economic importance for the Czechoslovak Republic because of the standardization of electric work which they have accomplished. They are easy to understand and can be supplemented by new rules. They are bound in a practical handbook of 262 pages, international size (148 by 210 mm). The book is an authentic reference work on electrical engineering data which is a standard for thousands of electrical engineers and firms throughout Czechoslovakia. The price of the edition in the Czechoslovak language is about $3.50, and in the German translation about $4.70.

A copy of the German translation of this code is available for review through the ASA Information Service.

Bureau of Standards Circular on Railway Track Scales

A new Bureau of Standards circular (No. 386), Specifications for the Manufacture and Installation of Railway Track Scales for Light Industrial Service, has been received by the ASA. The specifications were developed by a committee appointed and sponsored by the National Scale Men's Association, and, according to the introduction, are intended to apply to

> "knife-edge scales of the straight lever types for weighing cars in light industrial service. Requests for proposals for track scales conforming to these specifications should call for 'Light Industrial Service Railway Track Scales,' and should include such other information as will insure complete and intelligent proposals."

The circular is available directly from the Superintendent of Documents, Washington, D. C., or from the American Standards Association, for five cents; or may be borrowed for review through the ASA Information Service.

Quality Standards Affect Future of Advertising

Bruce Barton, whose leadership in the advertising business is well recognized, has set down in a formal paper in *Advertising and Selling* for October 29, 1930, a statement of his business philosophy—a "What I Believe" in respect to his profession. Under the question put by the editor "Where is advertising headed? What will it be like 30 years hence?" Mr. Barton says in part:

> "In the past ten years advertising has been more than usually interesting because of the vast number of new products and improvements upon old products which have had to be announced. It has been vitalized by news. This may continue, but it is entirely possible that the develop ment of such services as the Good Housekeeping Institute, the Delineator Institute, and of far greater importance, the United States Bureau of Standards, may in the future make many of the present purely competitive uses of advertising unnecessary or even obsolete."

ASA PROJECTS

A Review of Safety Code Projects under ASA Procedure

The second of a series of reviews of standardization projects under the procedure of the American Standards Association

The status of all safety code projects in process of development under ASA procedure is summarized in the following review prepared by Cyril Ainsworth, safety engineer of the ASA staff. The data presented are taken from the files of the American Standards Association and are corrected to December 1, 1930. The personnels of the sectional committees handling the projects may be found by reference to the project section of the 1930 American Standards Year Book (pages 31–80).

A10—Construction Work

Scope—Construction, demolition and repair of buildings; including excavation, foundation work, steel erection, scaffolding, lighting, openings, temporary floors and stairs in relation to accident hazards to employees and to the public.

Chairman—W. R. Smith, Assistant Chief Engineer, Newark Office, United Engineers and Constructors, Inc.

Secretary—W. Dean Keefer, Chief Engineer, National Safety Council, Chicago, Ill.

The first meeting of the sectional committee was held in Pittsburgh, Pennsylvania, September 29, 1930. This was purely an organization meeting and arrangements were made for the appointment of an executive committee and six sub-committees which will carry on the development of various sections of the work. Preliminary drafts for the use of these committees are being prepared.

A12—Floor and Wall Openings, Railings, and Toe Boards

Scope—Rules applicable to places of employment having exposure to the hazards of falling persons or falling materials, including floor openings and runways, with provisions for railings and toe boards.

Chairman—S. E. Whiting, Chief Engineer, Liberty Mutual Insurance Co., Boston, Mass.

Secretary—W. Dean Keefer, Chief Engineer, National Safety Council, Chicago, Ill.

The last meeting of this committee was held at Pittsburgh, Pennsylvania, on October 1, 1930. At that meeting, criticisms received as a result of a general distribution of the latest draft were considered and the preparation of a final draft is now under way. This draft will be submitted to the sectional committee for approval in the very near future.

A14—Ladders

Scope—Rules governing the safe construction and use of ladders of various types, including fixed, portable extension, fire, step, trolley, sectional, and trestle ladders.

Chairman—Charles M. Young, Manager, Constitution Indemnity Company, Philadelphia, Pa.

Secretary—M. G. Goodspeed, Safety Engineer, General Electric Company, Erie, Pa.

The original draft of this safety code was approved as Tentative American Standard in 1923. Work on a revision, with the viewpoint of advancing it to American Standard, was started in October, 1926. Several drafts of the revised code have been prepared and distributed for criticism. The criticism received on the last draft has been before a special subcommittee for consideration since September, 1928. Information has been received to the effect that the sub-committee will submit a report to the sectional committee before January 1, 1931.

A17—Elevators and Escalators

Scope—Construction, maintenance, and operation of elevators, dumb-waiters, escalators, and their hoistways, but not including conveyors, skip-hoists, amusement devices, or elevators of capacity exceeding 30,000 pounds and platform area exceeding 300 square feet, when suspended by cables near each corner of the hoistway and at additional positions, nor to elevators used only during building construction.

Chairman—Sullivan W. Jones, New York, N. Y.

Secretary—John A. Dickinson, U. S. Bureau of Standards, Washington, D. C.

This code, which was approved in 1925, is being revised by the sectional committee. Special work has been carried on through the employment, by the committee, of a research associate of the U. S. Bureau of Standards. Final draft of the code was referred to the sectional committee by letter ballot in May,

1930. Several criticisms of this draft were received, which made further work by the sectional committee necessary. A number of changes in the draft of last May have been prepared and forwarded to the sectional committee for approval. If these changes are approved, the code will be forwarded to the sponsors for approval prior to submission for approval by the American Standards Association.

A22—Walkway Surfaces

Scope—Pertinent walkway surface characteristics; including resistance to slipping, freedom from the tripping hazard, durability, flammability, insulation, as well as non-slip characteristics of walkway surfaces around electrical apparatus; general and maintenance requirements. For use in apartment houses, factories and other work places, office buildings, hospitals, hotels and restaurants, railway cars, railway stations and train platforms, schools and theatres; for elevator landings, corridor floors and door thresholds, ramps, runway floors, stairs and fire escape treads and landings, sidewalks, accessories to buildings, including coalhole covers, sidewalk doors and gratings, floors and platforms around moving machinery and electrical apparatus.

Chairman—L. W. Chaney, U. S. Bureau of Labor Statistics, Washington, D. C.

Secretaryship—Temporarily American Standards Association staff.

Eight separate tentative drafts have been prepared, none of which have been acceptable to the sectional committee with a sufficient degree of unanimity to make it possible to refer to Standards Council for approval. A special sub-committee charged with the duty of developing the final draft of the code was organized. This committee has prepared one draft which, when sent out for criticism, was found to be unsatisfactory and the committee is now engaged in the preparation of another draft. A meeting of this committee was held in Philadelphia on December 2 for the purpose of formulating a draft which will be sent to the sectional committee for final consideration.

A39—Window Washing

Scope—All window washing operations performed on the outside of office buildings and mercantile establishments more than one story high, or in which the sills of windows are located more than ten feet above grade or adjoining flat roof.

Chairman—G. F. Collins, Chicago, Ill.

Secretary—G. E. Burns, National Safety Council, Chicago, Ill.

A tentative draft of the Window Washing Code was prepared three years ago and submitted to the sectional committee for its decision. Soon after the preparation of this draft, word was received that the Underwriters' Laboratories were investigating the various materials used in the construction of window bolts, to which the employee fastens his safety belt while washing windows on the outside, in order to determine the most suitable material from which to construct this equipment. This investigation was undertaken because of accidents which had occurred from the breaking of the bolts. This research work has been completed by the Underwriters' Laboratories, and the sponsor for this project, the National Safety Council, is preparing a new draft based on the information received from the study. A special committee, appointed by the New York State Department of Labor, to formulate regulations for window washing, has completed its report and the Industrial Board is contemplating holding hearings to determine whether or not the regulations are satisfactory for adoption by the state. As many of the persons on the New York State committee are members of the sectional committee preparing the national code, the proposed New York code is also being studied by the sponsor in the preparation of the next draft.

B8—Foundries

Scope—Protection of workers in foundries making castings from iron, steel, aluminum, brass, bronze, and other similar alloys. The code deals exclusively with conditions in the foundry proper.

Chairman—F. H. Elam, National Steel Founders, Chicago, Ill.

Secretary—George E. Bergstrom, National Founders Association, Chicago, Ill.

A safety code for the protection of industrial workers in foundries was approved in 1922. A conference of the sponsors and others interested in this code was recently held in Chicago to determine whether or not a revision of the code should be undertaken. The revision was agreed upon and the first meeting of the sectional committee has been tentatively scheduled for December 16, 1930, in the Engineering Societies Building, New York.

B19—Compressed Air Machinery

Scope—Rules for the construction and use of compressors, tanks, pipe lines, and the utilization apparatus where compressed air is the active agent.

Chairman—H. D. Edwards, Linde Air Products Company, New York, N. Y.

Secretary—William C. Straub, Chicago Pneumatic Tool Company, New York, N. Y.

The decision to undertake the preparation of a safety code for Compressed Air Machinery was made in 1921, and the American Society of Safety Engineers, Engineering Section, the National Safety Council, and the American

Society of Mechanical Engineers accepted joint sponsorship for this project. The first meeting of the sectional committee was held in May, 1923, at which time the scope of the project was developed and arrangements made for conducting the work of the committee.

The next meeting was held in December, 1924, when a permanent chairman and secretary were elected and a general discussion of the project was held.

The personnel of the sectional committee was approved by Standards Council on November 12, 1925. No further meetings of the sectional committee have been held but a tentative draft of the code was prepared for the sponsors by the Industrial Division of the National Safety Council in February, 1930. This draft was forwarded, by the chairman, to the members of the sectional committee in June, 1930. An attempt was made to hold a meeting of the sectional committee in connection with the recent National Safety Congress of the National Safety Council but the proper attendance could not be secured.

B20—Conveyors and Conveying Machinery

Scope—Safe operation and maintenance of gravity, belt, chain flight, bucket, apron, screw and jigging conveyors, car hauls, aerial cableways, overhead trolleys and pneumatic tubes.

Chairman—Charles H. Newman, Society of Terminal Engineers, New York, N. Y.

Secretary—John A. Dickinson, U. S. Bureau of Standards, Washington, D. C.

This project was undertaken in 1925. The committee has been actively at work in the preparation of this code through its sub-committee organization. Drafts of most of the sections of the code have been completed and it is expected that the sectional committee will be able to complete its work within the next six months.

B30—Cranes, Derricks, and Hoists

Scope—Structural and operating rules for safety of overhead, gantry and locomotive cranes, derricks, hoists and slings and chains; but not including apparatus used in mines.

Chairman—J. C. Wheat, Assistant Chief Engineer, Industrial Brownhoist Corporation, Cleveland, Ohio.

Secretary—Benjamin F. Tillson, Consulting Engineer, North Caldwell, N. J.

Work was begun on the development of this project in 1925 and the committee has been active on various sections through subcommittee organizations. Most of the subcommittees have submitted reports to the sectional committee and these reports are now in the hands of the editing committee which is correlating individual sections of the code and developing them into shape as a completed code for final consideration by the entire sectional committee.

D4—Automobile Brakes and Brake Testing

Scope—The minimum acceptable retardation for various types of motor vehicles under the action of brakes; methods of making actual service tests of brakes.

Chairman—A. H. Blanchard, Toledo, Ohio.

Secretary—H. H. Allen, U. S. Bureau of Standards, Washington, D. C.

A meeting of the sectional committee was held in Washington, D. C., October 6, 1930. At this time decision was made to undertake a revision of the code which was approved in 1927. The original code was based on the fact that the majority of automobiles in use had the two-wheel brake system whereas most of the automobiles of present day manufacture have the four-wheel brake system. The revision is also to include more adequate specifications for brake systems for trucks. At the present time the sponsors are communicating with the organizations represented on the old sectional committee to determine whether or not they desire to continue representation. As soon as the personnel of the new committee is completed and approved, work on the revision of this code will be undertaken.

Z4—Industrial Sanitation

Scope—General sanitary requirements of industrial plants, construction operations, and temporary labor camps including water supply, drainage, sanitary conveniences, disposition of refuse, and waste.

Development of this project was undertaken in 1922. It was not until March, 1930, however, that any work was started, at which time the sponsor, the United States Public Health Service, designated one of its staff as the responsible officer for carrying on the work and the developing of a tentative draft for the consideration of the sectional committee. It was found that so much time had elapsed since the original committee was appointed that most of the members had completely lost interest and the sponsor thought it desirable to reconstitute the sectional committee. The personnel of the new committee has practically been completed and upon approval by the Standards Council it will proceed with the work of the consideration of this tentative draft.

Z5—Ventilation

Scope—Requirements in ventilation for factories and other work places.

The decision to undertake the development of a safety code for ventilation was made in 1920. No work on this project has been carried on. It was originally intended that the sponsor, the American Society of Heating and Ventilating Engineers, would submit its existing code which was adopted in 1915 to the American Standards Association for approval. This code was referred to the special committee which made a thorough study of the situation and recommended against approval of the 1915 draft on the grounds that the code was out of date in some very important respects and that considerable new work should be done. The American Standards Association approved this recommendation and referred the code to the sponsor with the request that a sectional committee be organized to revise the code and bring it up to date. The sponsor continued to carry on a large amount of research work and one of the special committees formulated a comprehensive report on the subject of heating and ventilating buildings. This report was submitted to the American Society of Heating and Ventilating Engineers in 1924. The Board of Directors of the society felt that Section II on this report entitled, "Minimum Ventilation Requirements for Public Buildings," would form a splendid basis for the work of the sectional committee. Following this, however, very little was done until early in 1927, when the sponsor made a determined effort to develop a sectional committee. The report previously mentioned was referred to the sectional committee for its decision but no further work has been undertaken.

Z9—Exhaust Systems

Scope—Safety standards for the construction and operation of apparatus for moving material by means of air currents. Applies particularly to those cases where dust, fumes, gases, or other deleterious or useless substances are formed, or given off, at some point in a process, and from which they may be removed by blowing or suction, or by properly arranged hoods or ducts.

Chairman—F. R. Still, American Blower Company, New York, N. Y.

Secretary—A. V. Hutchinson, American Society of Heating and Ventilating Engineers, New York, N. Y.

Development of this code was undertaken in 1920. No work in connection with the project has been started. It was not until 1929 that an effort to complete a sectional committe organization was made. Full information concerning the material on hand, and the status of the work of other sectional committees which were touching upon the developing of regulations for exhaust systems affecting the processes which they had under consideration, was forwarded to the members of the sectional committee in November, 1929, together with a questionnaire designed to obtain from the members of the committee an indication of the best method of carrying on the work and the processes which should be first considered.

Most of the members of the committee replied to this questionnaire, but no further work was undertaken until February, 1930, when an attempt was made to organize sub-committees to develop specifications for exhaust systems on the processes agreed upon by members of the sectional committee through their replies to the questionnaire. Very few members of the sectional committee responded to the invitation to serve on sub-committees, feeling that they were not qualified to be of proper assistance. No further work on the development of this code has been undertaken.

Z12—Prevention of Dust Explosions

Scope—Includes measures for the prevention of dust explosions in flour and feed mills, terminal grain elevators, starch factories; regulations for pulverizing systems for sugar and cocoa, and for the installation of pulverized fuel systems.

Chairman—David J. Price, United States Department of Agriculture, Washington, D. C.

Secretary—Hylton R. Brown, United States Department of Agriculture, Washington, D. C.

The sectional committee in charge of this work has developed a series of codes which have been approved by the American Standards Association, and through the sponsors there has been submitted to the Association a code for the Prevention of Dust Explosions in Coal Pneumatic Cleaning Plants. This code has been referred to the Safety Code Correlating Committee, the advisory committee of the American Standards Association in safety code matters, for recommendation to Standards Council for approval.

Z13—Amusement Parks

Chairman—George P. Smith, Jr., Philadelphia Toboggan Company, Germantown, Pa.

Secretary—Charles H. Bowditch, Philadelphia Toboggan Company, Germantown, Pa.

Several of the sections of this code have been prepared by sub-committees of the sectional committee and these are now being edited and correlated and developed into the form of a general code for consideration by the sectional committee. A meeting of this committee was held on November 21, at which time plans for speeding up and completing the work were developed.

Z16—Standardization of Methods of Recording and Compiling Accident Statistics

Scope—Revision of the classification of industries in the standard plan for accident statistics of the International Association of Industrial Accident Boards and Commissions, definitions of terms, the form of reporting accidents, the computation of accident rates, and the classification of causes of accidents, and also the consideration of possible revision of other features of the plan.

Chairman—L. W. Hatch, New York State Department of Labor, New York, N. Y.

Secretary—Lucian W. Chaney, United States Bureau of Labor Statistics, Washington, D. C.

The work of the sectional committee is being carried on by three sub-committees. Two of these sub-committees have submitted reports which were considered by the meeting of the sectional committee held in Pittsburgh, September 29, 1930. The criticisms received at that meeting were forwarded to the sub-committees for their consideration in developing final drafts of these two sections of the code. It is not expected that the work of the sectional committee will be completed before June, 1931.

Z20—Grandstands

Scope—The design and construction of permanent and temporary outdoor stands and temporary and portable indoor stands for the seating of audiences; stability and strength; volume and facility of exits from the standpoint of flow of traffic and prevention of panic jams; fire hazards and the provision of fire-fighting equipment for wooden or other combustible stands; sanitary arrangements; methods of erection of temporary and portable stands.

A request for the development of a safety code for Grandstands was received by the American Standards Association in 1929. The proposal was referred to the sub-committee on scope of the Safety Code Correlating Committee which recommended that the project be undertaken, and outlined a suggested scope. This recommendation was approved by Standards Council in March, 1930, and the project was referred back to the Safety Code Correlating Committee with power to proceed with the development of a proper sectional committee for carrying on the work.

A general conference was held for the purpose of developing a scope and receiving suggestions regarding organizations which should be invited to appoint representatives on the sectional committee. The Safety Code Correlating Committee approved the scope as outlined by the general conference and approved the carrying on of the work under the autonomous sectional committee method.

The personnel of the sectional committee has been completed and the committee held its first meeting on November 20, at which time arrangements were made for the appointment of sub-committees and the development of plans for proceeding with the work.

Zinc Coating Specifications Submitted for Approval

Specifications for the zinc coating (hot galvanizing) of structural steel shapes, plates, bars, and their products (G8c) have been submitted to the American Standards Association by the American Society for Testing Materials, as sponsor of the sectional committee on zinc coating of iron and steel, for formal approval and designation as American Tentative Standard. Approval of these specifications are now under consideration by the Standards Council.

The specifications are a revision of those originally developed and tentatively approved by the A.S.T.M. as their standard A123-29T. The principal points which have been given consideration in this revision of the specifications are as follows:

Steel Base Specifications.—The previous designations of specific grades of structural steel have been modified to include "the use of steel, of recognized manufacture, conforming to standard specifications."

Galvanizing Spelter Bath.—In addition to specifying that the grade of spelter used shall be equal to Prime Western, it was considered desirable to limit the amount of impurities contained in the molten zinc bath during the galvanizing operation since it is sometimes the practice to make metallic additions to the galvanizing bath (other than plate zinc) on the basis that such additions are fluxes and assist in the galvanizing operation. In view of the fact that the impurity limits in Prime Western Metal are set high, normal operation of the galvanizing bath, using grades of Prime Western spelter available to galvanizers, gives a zinc bath in the galvanizing pot having impurities lower than the limit set for Prime Western Metal. The proposed standard specifications, therefore, set as the maximum an amount of lead or iron in the bath during actual galvanizing operations not exceeding the limits allowed for Prime Western plate zinc, namely, 1.60 per cent lead, 0.08 per cent iron, and 0.01 per cent aluminum.

Steel Embrittlement.—The much mooted subject of steel embrittlement has been tentatively covered in the specifications pending the re-

sults of an investigation on the properties and causes of embrittlement now being undertaken by the A.S.T.M. Committee on Corrosion of Steel and Iron.

Weight of Zinc Coating.—It is recommended that the weight of zinc coating per square foot of strip surface shall not average less than 2.0 oz, and that no individual specimen shall show less than 1.8 oz. It was first thought that the weight of coating could be determined by stripping coupon specimens of similar thickness attached to the material being galvanized. It was found after a long and thorough investigation that this method for determining the weight of zinc coating was not feasible. It was, therefore, recommended that the weight be determined by weighing one or more specimens after pickling and drying and again after coating; or in case of material manufactured without inspection, the weight may be determined by stripping an entire piece in accordance with the A.S.T.M. standard method A90 on the subject.

Uniformity of Zinc Coating.—The question of uniformity was originally covered on the basis of a visual examination by the purchaser. However, in view of the general use of the Preece Test by consumers of galvanized structural steel materials to determine the uniformity of the zinc coating, this test was incorporated in the specifications, although it is considered inadequate for determining the weight, thickness, or uniformity of the zinc coating.

Approval of these standards is being balloted upon as the ASA BULLETIN goes to press.

A limited number of copies of the specifications are available for review through the ASA Information Service.

Standard for Automatic Stations Submitted

The American Institute of Electrical Engineers has submitted to the ASA for approval as American Standard under the proprietary method its standard number 26, Automatic Stations. The standard was approved by the Institute in its original form in April, 1928, and the revised edition which is now submitted for approval by the ASA was approved by them on May 23, 1930.

The request of the A.I.E.E. for approval has been referred to the Electrical Advisory Committee for its recommendation to the Standards Council, and it is expected that the Advisory Committee will consider the matter at an early date.

Splines and Splined Fittings to Be Standardized

The standardization of splines and splined shafts which has been undertaken by the Sectional Committee on Small Tools and Machine Tool Elements (B5) is now receiving consideration by a sub-committee on the subject.

At a meeting in Detroit, Michigan, on November 11, the technical committee discussed existing standards for splines and splined shafts. Two sub-groups were appointed to initiate the development of spline standards. One sub-group, with Mr. R. E. W. Harrison, chief engineer of the Cincinnati Grinders, Inc., as chairman, is to undertake the development of spline standards suitable for the machine tool industry; the other sub-group with Mr. W. L. Barth, Standards Engineer, General Motors Corporation, as chairman, is to develop suitable automotive and aeronautic standards. Each sub-committee will act independently of the other, although the recommendations of both will be subjected to the approval of the technical committee.

Previous attempts to standardize splines have been restricted to the fitting or soft broached hole, the various factors in all spline applications being considered too variable to permit similar standardization in the mating part. Recently a reversal of this opinion has been observed through the standards on the subject developed by the General Motors Corporation and the British Engineering Standards Association, both of which give definite dimensional limitation for both the fitting and the shaft. The Committee plans to follow this latter precedent so as to permit greater freedom in the development of the standards and further will disregard, for the present, the existence of patents which might be thought to affect methods of spline manufacturers.

Multiple splines of large diameters are also to be considered by the committee. It was, however, thought by the members present that consideration of this type could be postponed until definite recommendations had been developed for the other types.

Belgian Wire Standard

There has been received from the Belgian national standardizing body a copy of their report number 10 dated September, 1930, covering specifications for rubber insulated wires and cables. The document is in French, and is available for loan through the ASA Information Service.

New Standard Fiber Stresses for Wood Poles

The new values for the ultimate fiber stresses of wood poles (O5a) were approved as American Standard under date of November 28. These values are as follows:

Northern white cedar	3600 lb per sq in.
Western red cedar	5600 lb per sq in.
Chestnut	6000 lb per sq in.
Southern yellow pine (creosoted)	7400 lb per sq in.

Under the provisions of the National Electrical Safety Code the new values automatically replace the old figures of 6500 pounds for dense yellow pine, and 5000 pounds for other yellow pine, chestnut, and western red cedar, that have been in general use by pole line engineers. Northern white cedar remains unchanged.

The new standards are the result of an extensive study conducted by the Association's sectional committee on wood poles. The committee was organized in 1924 under the sponsorship of the Telephone Group, embracing the Bell System and the United States Independent Telephone Association. The chairman of the committee is Dr. R. L. Jones, Directory of Apparatus Development in Bell Telephone Laboratories, New York City. A partial list of the membership of the committee includes representatives of the American Telephone and Telegraph Company, the United States Independent Telephone Association, the Western Union Telegraph Company, the Postal Telegraph-Cable Company, the American Institute of Electrical Engineers, the American Railway Association, the American Electric Railway Association, the American Society for Testing Materials, the United States Bureau of Standards, the United States Forest Products Laboratory, the American Wood-Preservers' Association, the Western Red Cedar Association, the Northern White Cedar Association, the National Committee on Wood Utilization, the Yale University School of Forestry, the Electric Light and Power Group, the National Association of Purchasing Agents, an independent producer (J. R. Coolidge, Coolidge, Brooks, and Rogers), a producer of chestnut poles (American Forest Products Company), the American Forestry Association, the American Society for Municipal Improvements, the Canadian Department of Interior, an independent expert (Hermann Von Schrenk, Von Schrenk and Kammerer), the New York State College of Forestry, and the Society of American Foresters.

The public utilities of this country require annually a total of approximately 4,000,000 poles, southern pine, cedar, and chestnut. The agreement among the representatives of the groups mentioned above as to ultimate fiber stresses for poles marks an important step in standardization practice in the United States.

Copies of the new standard are available free of charge through the ASA Information Service.

Sub-Committees on Electrical Definitions Submit Reports

Substantial progress in its task of formulating a dictionary of electrical terms is being made by the sectional committee on electrical definitions, according to the minutes of the October 29 meeting of the committee, which have just been received. Sub-committee 1, covering fundamental and derived terms, and sub-committee 4, covering instruments and testing, have issued tentative reports for the use of the sectional committee.

Sub-committee 3b, control equipment; sub-committee 5, generation, transmission, and distribution; and sub-committee 6, transportation, have issued semi-final reports in each case covering definite parts of their assignments, which it is expected will be available for general distribution in printed form within the next two months for the purpose of securing comments and suggestions.

A.S.T.M. Papers Available

Copies of the following papers have been received and are available for loan through the ASA Information Service, or may be purchased for 25 cents per copy from the American Society for Testing Materials, 1315 Spruce Street, Philadelphia:

"A Method for the Determination of the True Acid Value of Oils, Varnishes, Liquid Driers and Soaps," by E. W. Diener and S. Werthan.

"A Practical Brush-Out Test for Hiding Power of Paints," by H. A. Gardner, G. G. Sward, and S. A. Levy.

"A Discussion of Hiding Power and Its Measurement," by G. F. A. Stutz, Jr., and G. S. Haslam.

"Paint Failure Diagnosis," by Robert Job.

"Procedure Used by the Forest Products Laboratory for Evaluating Paint Service on Wood," by F. L. Browne.

These papers were presented at the Thirty-third Annual Meeting of the American Society for Testing Materials, June 23–27, 1930.

CREOSOTED SOUTHERN YELLOW PINE POLES

CLASS		1	2	3	4	5	6	7	8	9	10
MIN. TOP CIRC. (Inches)		27	25	23	21	19	17	15	18	15	12
Length of Pole (Feet)	Ground Line Dist. from Butt (Feet)	MINIMUM CIRCUMFERENCE AT SIX FEET FROM BUTT (Inches)							No Butt Requirement	No Butt Requirement	No Butt Requirement
16	3½					21.5	19.5	18.0			
18	3½			26.5	24.5	22.5	21.0	19.0			
20	4	31.5	29.5	27.5	25.5	23.5	22.0	20.0			
22	4	33.0	31.0	29.0	26.5	24.5	23.0	21.0			
25	5	34.5	32.5	30.0	28.0	26.0	24.0	22.0			
30	5½	37.5	35.0	32.5	30.0	28.0	26.0	24.0			
35	6	40.0	37.5	35.0	32.0	30.0	27.5	25.5			
40	6	42.0	39.5	37.0	34.0	31.5	29.0	27.0			
45	6½	44.0	41.5	38.5	36.0	33.0	30.5	28.5			
50	7	46.0	43.0	40.0	37.5	34.5	32.0	29.5			
55	7½	47.5	44.5	41.5	39.0	36.0	33.5				
60	8	49.5	46.0	43.0	40.0	37.0	34.5				
65	8½	51.0	47.5	44.5	41.5	38.5					
70	9	52.5	49.0	46.0	42.5	39.5					
75	9½	54.0	50.5	47.0	44.0						
80	10	55.0	51.5	48.5	45.0						
85	10½	56.5	53.0	49.5							
90	11	57.5	54.0	50.5							

WESTERN RED CEDAR POLES

CLASS		1	2	3	4	5	6	7	8	9	10
MIN. TOP CIRC. (Inches)		27	25	23	21	19	17	15	18	15	12
Length of Pole (Feet)	Ground Line Dist. from Butt (Feet)	MINIMUM CIRCUMFERENCE AT SIX FEET FROM BUTT (Inches)							No Butt Requirement	No Butt Requirement	No Butt Requirement
16	3½					23.0	21.5	19.5			
18	3½			28.5	26.5	24.5	22.5	21.0			
20	4	34.5	32.0	30.0	28.0	25.5	23.5	22.0			
22	4	36.0	33.5	31.5	29.0	27.0	25.0	23.0			
25	5	38.0	35.5	33.0	30.5	28.5	26.0	24.5			
30	5½	41.0	38.5	35.5	33.0	30.5	28.5	26.5			
35	6	43.5	41.0	38.0	35.5	32.5	30.5	28.0			
40	6	46.0	43.5	40.5	37.5	34.5	32.0				
45	6½	48.5	45.5	42.5	39.5	36.5					
50	7	50.5	47.5	44.5	41.0	38.0					
55	7½	52.5	49.5	46.0	42.5	39.5					
60	8	54.5	51.0	47.5	44.0						
65	8½	56.0	52.5	49.0	45.5						
70	9	57.5	54.0	50.5	47.0						
75	9½	59.5	55.5	52.0	48.5						
80	10	61.0	57.0	53.5	49.5						
85	10½	62.5	58.5	54.5							
90	11	63.5	60.0	56.0							

CHESTNUT POLES

CLASS		1	2	3	4	5	6	7	8	9	10
MIN. TOP CIRC. (Inches)		27	25	23	21	19	17	15	18	15	12
Length of Pole (Feet)	Ground Line Dist. from Butt (Feet)	MINIMUM CIRCUMFERENCE AT SIX FEET FROM BUTT (Inches)							No Butt Requirement	No Butt Requirement	No Butt Requirement
16	3½					22.5	21.0	19.5			
18	3½			28.0	26.0	24.0	22.0	20.5			
20	4	33.5	31.5	29.5	27.0	25.0	23.0	21.5			
22	4	35.0	33.0	30.5	28.5	26.5	24.5	22.5			
25	5	37.0	34.5	32.5	30.0	28.0	25.5	24.0			
30	5½	40.0	37.5	35.0	32.5	30.0	28.0	26.0			
35	6	42.5	40.0	37.5	34.5	32.0	30.0	27.5			
40	6	45.0	42.5	39.5	36.5	34.0	31.5	29.5			
45	6½	47.5	44.5	41.5	38.5	36.0	33.0	31.0			
50	7	49.5	46.5	43.5	40.0	37.5	34.5	32.0			
55	7½	51.5	48.5	45.0	42.0	39.0	36.0				
60	8	53.5	50.0	46.5	43.5						
65	8½	55.0	51.5	48.0	45.0						
70	9	56.5	53.0								

NORTHERN WHITE CEDAR POLES

CLASS		1	2	3	4	5	6	7	8	9	10
MIN. TOP CIRC. (Inches)		27	25	23	21	19	17	15	18	15	12
Length of Pole (Feet)	Ground Line Dist. from Butt (Feet)	MINIMUM CIRCUMFERENCE AT SIX FEET FROM BUTT (Inches)							No Butt Requirement	No Butt Requirement	No Butt Requirement
16	3½					26.0	24.0	22.0			
18	3½			32.5	30.0	28.0	25.5	23.5			
20	4	39.5	37.0	34.0	31.5	29.0	27.0	25.0			
22	4	41.0	38.5	36.0	33.0	30.5	28.0	26.0			
25	5	43.5	41.0	38.0	35.5	32.5	30.0	28.0			
30	5½	47.5	44.5	41.5	38.5	35.5	33.0	30.5			
35	6	50.5	47.5	44.0	41.0	38.0	35.0	32.5			
40	6	53.5	50.0	46.5	43.5	40.0	37.0				
45	6½	56.0	52.5	49.0	45.5	42.0					
50	7	58.5	55.0	51.5	47.5	44.0					
55	7½	61.0	57.5	53.5	49.5	46.0					
60	8	63.5	59.5	55.5	51.5						

PROPOSED CIRCUMFERENCE TABLES FOR CREOSOTED SOUTHERN YELLOW PINE, CHESTNUT, WESTERN RED CEDAR, AND NORTHERN WHITE CEDAR POLES

Proposed Standard Dimension Tables for Wood Poles

by

R. L. Jones,[1] *Chairman*
Sectional Committee on Wood Poles

In connection with the preparation of material specifications for poles, sectional committee O5 has drawn up uniform dimension tables for creosoted southern pine, western red cedar, northern white cedar, and chestnut, designed to meet the engineering requirements of communication, power and light, and transportation companies.

As the first step in establishing a proper engineering basis for the dimensions, the Committee reviewed the available data on the fiber strength of the respective species, and as a result unanimously recommended that the following ultimate fiber stresses be made standard:[2]

Northern White Cedar	3600 lb per sq in.
Western Red Cedar	5600 lb per sq in.
Chestnut	6000 lb per sq in.
Southern Yellow Pine (Creosoted)	7400 lb per sq in.

After careful study of the requirements of consumers and suppliers, the committee adopted the following principles as a working plan for the development of the tables:

1. All tables shall be based on standard fiber strengths for the respective species. (The values given above were used pending approval by the Standards Council. This approval has been granted under date of November 28.)

2. The tables shall specify dimensions in terms of circumference in inches at six feet from the butt, except for classes of "No Butt Requirement," and circumference in inches at the top for poles of the respective lengths and classes.

3. All poles of the same length and class shall have when new approximately equal strength, or in more precise terms, equal moments of resistance at the ground line.

4. All poles of different lengths within the same class shall be of suitable size to withstand approximately the same breaking load, assuming that the load is applied two feet from the top and that the break would occur at the ground line.

5. The smallest class for which butt measurements shall be specified shall have a breaking load under the conditions stated in Principle 4 of approximately 1200 pounds.

6. The largest class for which butt measurements shall be specified shall have a breaking load under the conditions stated in Principle 4 of approximately 4500 pounds.

7. The classes from the lowest to the highest shall be arranged in geometric progression, the increments between classes, measured in terms of breaking load, to be approximately 25 per cent.

With the above principles as a general guide, a table of ten classes was prepared. Classes eight, nine, and ten, having no butt requirement, were defined by minimum permitted top circumferences only. Classes one to seven, defined primarily by their circumferences at six feet from the butt, were designed to meet the following breaking loads, under the conditions imposed in Principle 4:

Class 1	4500
Class 2	3700
Class 3	3000
Class 4	2400
Class 5	1900
Class 6	1500
Class 7	1200

The breaking loads were then translated into terms of moments of resistance at the ground line. The required circumferences at the ground line for the respective species were calculated by means of the formula $Mr = .000264\ f\ C^3$, where Mr is the moment of resistance, f the standard fiber stress, and C the circumference in inches. The ground line circumferences thus obtained were converted to circumferences at six feet from the butt by means of average taper values for the respective species. In arriving at the figures for

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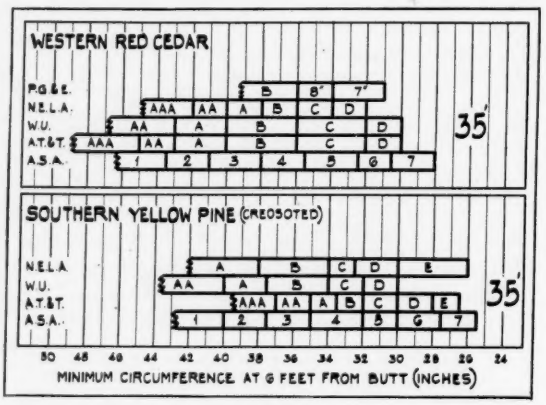
[2] Notice of the approval of this standard, entitled "Standard for ultimate stresses of wood poles—O5a," appears on page 35 of this issue of the ASA BULLETIN. Employment of this standard in the National Electrical Safety Code is provided for in the fourth edition (1927), under rule 261-4-c.

six feet from butt circumference that appear in the dimension tables the calculated figures were rounded up to the nearest half inch.

Average Pole Stronger than Rating

The breaking load ratings given above are based on the minimum size pole for any given length and class. The ratings are conservative. Experience over a number of years has shown that the average size pole for a class, based on its six foot from butt circumference, is approximately midway between the minimum



Representative Blocks from the Graphical Charts for Western Red Cedar and Southern Yellow Pine (Creosoted) Showing How Current Dimension Tables Are Compared with the Proposed Tables.

circumference permitted for the class and the minimum of the next higher class. In general, therefore, the average pole of a given class will be considerably stronger than the rating for the class.

Until such time as data become available on the strength of pine poles treated with other preservatives than creosote, the dimension tables for creosoted pine may be used for pine in general. The tables for the other three species may be applied over the whole range of their respective uses. The choice of sizes is sufficiently extensive to enable the plant engineer to select poles to meet specific requirements after the load conditions of the line have been determined.

Graphical charts have been prepared showing the relation between representative current dimension tables and the proposed standards. These charts should be of material assistance to suppliers and consumers who wish to make a comparison between the old and new classifications for inventory or cost record purposes. Copies of these charts, as well as copies of the proposed tables, may be obtained from the American Standards Association Information Service.

ASA Approves Standard for Track Bolts and Nuts

The American Standards Association has approved the American Standard on Track Bolts and Nuts (B18d-1930) prepared by the technical committee on Bolt, Nut, and Rivet Proportions under the sponsorship of the American Society of Mechanical Engineers and the Society of Automotive Engineers. The standard is based on the study of the different types of track bolts used by the various railroads and electric railways in the United States and Canada and it is thought that the recommended dimensions will cause little disturbance to existing practice.

Particular attention has been given to the reduction of the number of wrench openings needed. The wrench openings are based on the American tentative standard B18b-1927 on wrench head bolts and nuts and wrench openings. Tables giving dimensions of oval neck track bolts, elliptic neck track bolts, and track bolt nuts are given. The elliptic neck track bolts are mentioned as representing special types and sizes to be used during the transition period. Special sizes in sixteenths of an inch of oval neck track bolts have also been added in the tables concerned, for use during the transition period. On new construction the sizes in eighths of an inch should be used so that the standard sizes may come into general use as quickly as possible. The special sizes are meant for replacement in existing splice bars only.

During the development of the standard, tests were carried out by the railroads and manufacturers of track bolts on samples made to the dimensions of the standard. These appeared to give satisfactory results and the American Railway Engineering Association consequently adopted the standard in May, 1930, as its recommended practice. The vote of the ASA technical committee was unanimously in favor of the approval of the standard.

Engineering Assistance Needed in Government Purchasing

The provision of competent and unprejudiced engineering assistance to develop specifications which assure real competition are necessary in the government purchasing organizations if the purchasing is to be conducted efficiently, according to L. F. Boffey, editor of the *Purchasing Agent*. Mr. Boffey also points out the need for testing and inspection facilities to insure compliance with specifications.

Standards for Machine Pins Available for Review

As a result of a study of foreign and domestic standards on the subject, the sectional committee on the standardization of machine pins has developed a proposal covering pins of the cylindrical and taper types, which is now being widely circulated to industry for review and criticism.

The draft proposal covers a diameter range of taper pins from 1/16 to 1 1/2 inches and a length range of 1/2 to 12 inches. The committee has been able to reduce the number of keys now stocked from 173 to 143 and at the same time provide a suitable overlapping of sizes.

In developing the proposed standard, an effort has been made to eliminate the several objectionable features in the present nonstandard systems without passing on to industry any unnecessary burden involving replacements and interchangeability of the pins themselves and also involving drills and reamers. Although some temporary inconvenience will be experienced by perhaps a dozen taper pin manufacturers by the increase in number of sizes of raw stock due to variation in the larger diameters of the pins, it will mean, according to a statement accompanying the proposed standard, a corresponding simplification in drill sizes for a great number of taper pin users.

Number of Sizes Reduced

The proposed standard retains the present taper of 1/4 inch per foot of length and designates the size of pin from the diameter of its smaller end—a practice which has been adopted by the standardizing bodies of several countries of Europe. The small diameter of the pins is in the usual fractional dimensions, spaced by thirty-seconds from 1/16 to 3/16 inch diameter, by sixteenths to 3/8 inch diameter, by eighths to 3/4 inch diameter, and by quarters to 1 1/2 inch diameter. The number of diameters is reduced from 20 to 14 with a better spacing of sizes. The ends of the pins have been rounded to facilitate driving, to lessen the possibility of cutting, to prevent deformation of the side bearing surface, and to make it unnecessary to drive the pins to such an exact location in their places as pins with sharp, distinct edges. Among the objectionable features eliminated or minimized are the following: the present arbitrary numerical symbolization which has no direct mathematical relation to the actual size of the pin; the irregular progression from one size of pin to another; adoption of large diameter as a basis for size designation.

In the general discussion accompanying the proposal it is also stated that:

> "another objectionable feature, though not dealing with pins directly, is the lack of coherent relationship between the pins and reamers. A study of the related dimensions of the pins and reamers and, in particular, the overlap of a reamer beyond both ends of taper pins of maximum length shows that present conditions leave much to be desired. There is a lack of uniform progression between the various sizes of reamers and in two cases the small end of the reamer is larger than the small end of a pin of maximum length. Furthermore, an agreement between various manufacturers is also lacking."

The proposed American Standard for cylindrical pins is intended to cover the requirements of machine pins used as rod-end pins, pivots, dowels, journals, idler pins, locating pins, cam roller pins, short axles, and others, which are not standardized to any extent in this country and generally speaking are not presented as commercial articles. Each designer is required to design his own pins and each shop makes them according to these designs.

The suggested series includes 94 sizes, which compares favorably with the variety adopted as standard in Europe. The diameters and lengths of cylindrical pins vary in much the same way as diameters and lengths of taper pins, except that the maximum length is given as 8 diameters instead of 12 diameters. The use of well-defined proportions and commonly preferred sizes for diameters and lengths permits the expansion of the series for specific requirements at a later date.

Copies of the drafts of the proposed standards are available and may be borrowed from the ASA Information Service.

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Revised Draft of Proposed Pressure Piping Standard

A revised draft of the proposed standard pertaining to fabrication of hangers, supports, anchors, sway bracings, and vibration dampeners is being circulated by the sectional committee on Pressure Piping (B31) for comment and criticism.

The circulation of the original draft was announced in the August issue of the ASA BULLETIN. The revised draft incorporates comments, criticisms, and changes recommended since that time.

Copies of the revised draft are available through the ASA Information Service.

Bureau Compiles Standards for Nonmetallic Minerals

A compendium of all important standards and specifications relating to nonmetallic minerals and their products has been issued by the United States Bureau of Standards. This volume, including standards and specifications prepared by technical societies and trade associations of national scope, by government groups, as well as by technical committees under ASA auspices, is the second of an encyclopedia series of volumes of standards, the first of which was issued in 1927 under the title "Standards and Specifications in the Wood Using Industries." The present volume includes material under the following sub-divisions:

Coal, petroleum, asphalt, and mineral wax
Stone, sand, and cementitious materials
Glass and glass products
Clay and clay products
Abrasive materials, asbestos, and chalk
Mica, rare minerals
Precious stones and imitations
Sulphur, magnesia, salt, and graphite
Other nonmetallic minerals

All of the material in the volume is arranged to conform with the decimal system of indexing used in the National Directory of Commodity Specifications. The introduction to the volume states:

"Neither in the selection of the specifications for inclusion in the volume, nor in the arrangement and the substance of the specifications included, has any preference been exerted. An effort has been made to include all standards and specifications properly belonging within the scope of nonmetallic minerals, which have been promulgated or adopted by technical societies, trade associations, or other organizations qualified to speak authoritatively for industry, and nationally recognized to that extent; and by agencies authorized to represent the Federal Government as a whole. It has been found that for many of the commodities there exist several specifications, and naturally many of these specifications overlap, to an extent, in their substance. In such cases free use has been made of a system of reference, with no idea of indicating preference, simply to avoid unnecessary duplication in presentation.

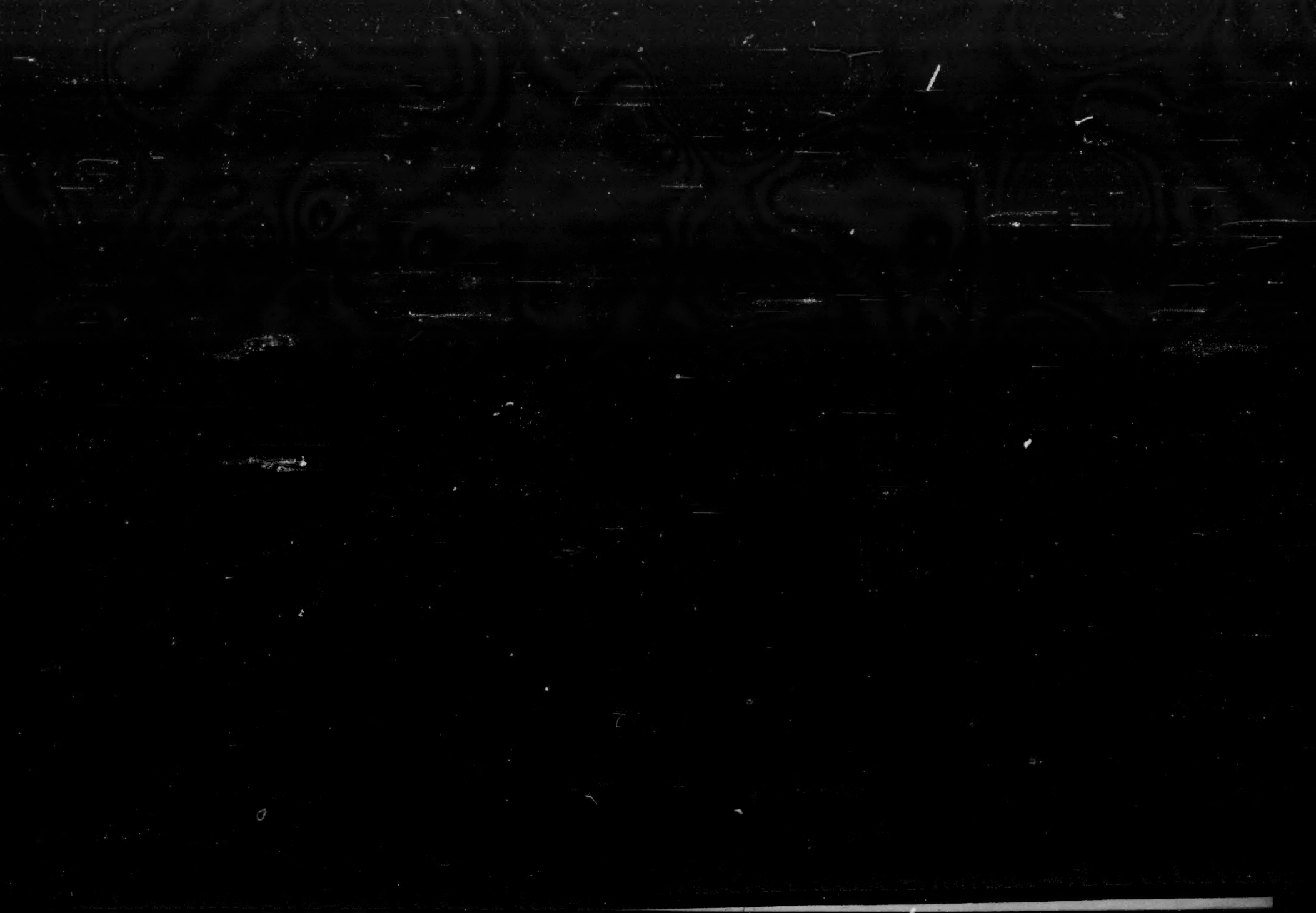
"This volume furnishes a fair portrayal of the extent of standardization. It discloses the fact that simplification of commercial practices, or, in other words, standardization of standards, is in certain fields an accomplished fact, while in others little progress has thus far been made. Under the auspices of the commercial standardization group of the Bureau of Standards, and the American Standards Association, formerly known as the American Engineering Standards Committee, simplification and standardization on a national scale are being carried forward at an ever-increasing speed. However, much yet remains to be done in the unification of standards and specifications.

"With more than threescore agencies contributing the material utilized in the present volume, variances in tests are plentiful. It is for the user of this volume, where options in specifications are offered, to make his own selections, and to determine whether or not his needs are to be met by the standards and specifications presented here."

The volume may be obtained from the Superintendent of Documents, Washington, D. C., for $2.75 per copy. A copy is available for loan to Sustaining-Members through the ASA Information Service.

British Automobile Industry Agrees to Standardize

An effort to meet the competition of American automobile manufacturers by means of standardization is being made by the British automobile industry, according to the *Times and Mirror* of Bristol, England. A correspondent of the *Times and Mirror* states that virtual agreement has been reached among all sections of the industry for the standardization of many important component parts of cars.

Among the parts which he expected would be standardized shortly are chassis frames, gearboxes, windows, and battery boxes. Chassis frames, at present made in 100 shapes and sizes, the correspondent says, will be made in only one-half dozen. The standardization will be simplified and at the same time made more effective, he says, by the fact that few if any British car makers now manufacture such parts as chassis frames, wheels and tires, glass windows, or electrical equipment. These components are produced by concerns outside the industry who specialize in a single component.

He also expects that the standardization program will aid in the marketing of British automobiles abroad since the securing of replacement parts will be simplified.